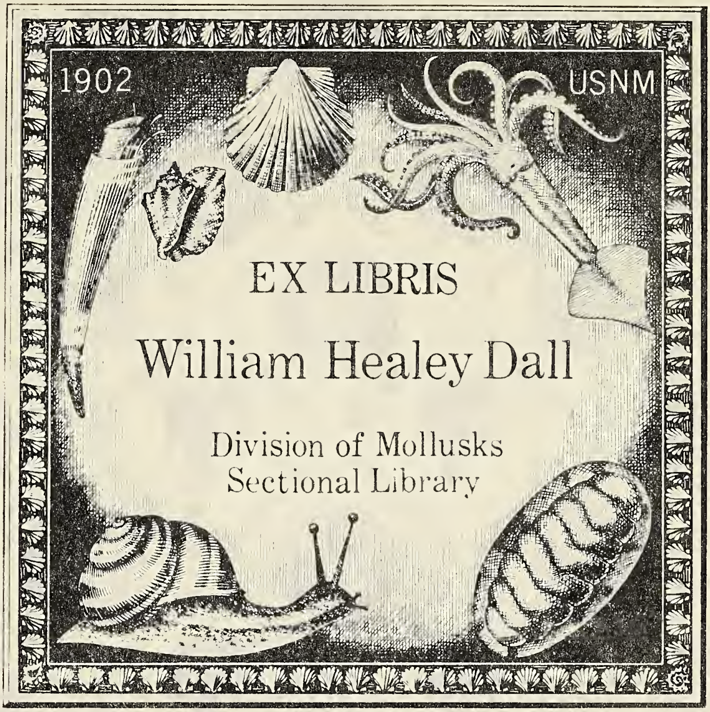

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The American Malacological Union

ANNUAL REPORT 1954

Twentieth Annual Meeting

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American Malacological Union — Pacific Division

Seventh Annual Meeting

Membership List Revised December 1954

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TWENTIETH ANNUAL MEETING
# of the
AMERICAN MALACOLOGICAL UNION
(Aug. 16, 17, 18, 1954)

Long before the gasoline age brought tourists to New England, poets penned their praises of her summertime charm. The poet of today writes advertising jingle but the charm of New England remains to delight the summer visitor. Just off a busy highway lies the little college town of Durham, New Hampshire; the four-score delegates who attended the twentieth annual meeting as guests of the University of New Hampshire walked beneath elms which may well have cast their shade upon the bards who immortalized them so long ago.

The meeting was scheduled to begin on Monday, August 16th, but before the campus bugler sounded taps on Sunday thirty early arrivals had registered and were ensconced in the dormitory rooms provided for their convenience. Having been greeted and warmly welcomed by host Prof. George M. Moore, they spent the evening hours in renewing old friendships and establishing new ones, for this was the second largest meeting in A.M.U. history and many new faces were in evidence.

Official registration and a meeting of the Executive Council occupied Monday forenoon, and when at 1:00 P.M. President Joseph C. Bequaert rapped for order the assemblage in the meeting room in Nesmith Hall was nearly complete.

A cordial address of welcome was voiced by Dean Edward Y. Blewett; he remarked that malacology is but one of the many facets of knowledge that a dean of a College of Liberal Arts has to face. "The world is so full of a number of things!" quoted he in closing.

In reply, President Bequaert paraphrased Dean Blewett's observation by stating that the world is so full of a number of shells, and he noted that all phases of malacology were represented among the delegates before him. He then introduced the Dean of all malacologists, Dr. Henry A. Pilsbry who rose to acknowledge the warm applause of his admiring friends and colleagues.

President Bequaert then introduced the first speaker:

COMPARISON OF THE GASTROPOD FAUNA IN THE DRAINAGE SYSTEMS OF CHAMPAIGN COUNTY, ILLINOIS

Ralph W. Dexter
Kent State University, Kent, Ohio

(Abstract)

Champaign County in east-central Illinois is a nearly level upland plain which contains exclusively the headwaters of six streams—the Salt Fork and Middle Fork of the Big Vermilion River, the Sangamon, Kaskaskia, Embarrass, and Little Vermilion Rivers. While the headwaters are in close juxtaposition, the mouths of these rivers are widely separated. Gastropods were collected in the fall of 1934, spring of 1935, spring of 1945 and 1946, fall of 1951, spring of 1952 and 1953. Identifications of early collections were made by Frank Collins Baker and N. T. Mattox. Twelve species

were collected as follows: *Physa gyrina, P. anatina, Fossaria humilis modicella, Ferrissia tarda, Helisoma trivolvis, Goniobasis livescens, Lymnaea obrussa, Campeloma rufum, Pleurocera acuta, Amnicola limosa, Gyraulus parvus, Pseudosuccinea columella.* The common species were widely distributed and for the most part found in all drainages. The only notable exception was *P. anatina,* identified by W. J. Clench, which had presumably been introduced into the drainage of a sewage disposal plant. Dispersal factors other than stream connections, which are far apart in this case, are possible aquatic birds and mammals.

Slides which accompanied Dr. Dexter's paper presented maps of the area under discussion. Pilsbry: "I think that you would have found greater differences in distribution if the Unionidae had been considered; the gastropods are always more widely dispersed." Jacobson: "You mention *Campeloma rufum;* is that not now considered to be *C. decisum?*" Morrison: "Those species are entirely distinct; they both live in the James River and cannot interbreed since all of both species are parthenogenic females. However, I question that *C. rufum* lives in the Illinois area." Dexter: "F. C. Baker and others at the University of Illinois collected extensively there and he was firmly convinced that all of them were *C. rufum.*"

VARIATION IN *MESODON FERRISSI* PILSBRY

Alan Solem
University Museums, Ann Arbor, Mich.

(Abstract)

As part of a long range study of ecological variation in land mollusca, the author has made a preliminary survey of conchometric variation in *Mesodon ferrissi* (Pilsbry) and summarized the historical records and known ecology of the species.

Preliminary conclusions are that the limiting factor of distribution is moisture and that differences in spire height between specimens found on Clingman's Dome (6600′) and at the base of the Chimneys (2800′) are statistically significant (means were more than 3 standard deviations apart) and probably are associated with the greater chances of dessication at the lower level, necessitating retreat deep into rock piles. Under such conditions, low spire would have selection value. Whether the adaptation is genotypic or phenotypic is unknown.

Mr. Solem's paper was accompanied by kodachrome slides showing charts of collecting stations, the general topography of the area and the snails being collected in their natural habitat. Morrison: "I wonder if they range from beneath the stones at night. Did you collect at night?" Solem: "No." Bequaert: "It would be interesting to try collecting by sugaring the trees in the area; snails often are so taken when trees are sugared for moths." Jacobson: "Do they look like any other species?" Solem: "Not really; once you start collecting them you couldn't mistake them." Bequaert: "It is dangerous to take statistics from a number of collections; how many did you use?" Solem: "I studied our collection at Ann Arbor, then at the Academy of Natural Sciences and MCZ — only three or four." Bequaert: "Do you know what proportion of the specimens were taken alive?" Pilsbry: "We got all of ours alive." Solem: "In that area it is much easier to find live than dead shells."

CHATTAHOOCHEE SURVEY

William J. Clench
Museum of Comparative Zoology

(Abstract)

This is a report of the ecological survey made during the summer of 1953 of the soon-to-be inundated areas of the Chattahoochee and Flint rivers in northern Florida and Georgia. Our part, in the over-all survey being carried out under the auspices of the University of Florida, was to collect land and freshwater mollusks before their habitat is destroyed or changed.

We noted a distressing amount of silting in the Chattahoochee, rather less in the Flint which embraces several large springs.

Further study is to be made when we leave for the area at the conclusion of this meeting. One of the most pressing problems of malacologists right now is that of our own freshwater mollusks. The amount of work ahead is appalling and the need for immediate attention is urgent.

Kodachrome slides pictured the area under discussion, examples of soil erosion and some of the shells collected.

Solem: "Those are beautiful close-ups of the shells; who made them?" Clench: "Dr. Turner, in all cases." Pilsbry: "Clench is doing valuable work there. Our freshwater shells are disappearing rapidly." Bequaert: "I want to urge everybody: collect freshwater material in your own area and put all possible data on your labels. It will be increasingly valuable."

A FEW OLD SHELL BOOKS

Richard, I. Johnson
Needham, Mass.

Mr. Johnson displayed a fascinating array of old books, all of which dealt with or touched upon shells; in one ancient tome a mermaid was pictured and described as a scientific fact.

The first day's meeting was adjourned at this point and the delegates hurried back to Fairchild Hall to change into collecting clothes, for a picnic supper was being prepared at Nubble Light, Maine. Though several cars made the 22 mile drive, carefully prepared directions brought all to the site without any becoming lost. True, one party quite prominent in malacological circles did drive away in the wrong car and returned unaware (until later!) that he was being sought by police in four states, but at the time nothing marred the serenity of a perfect evening in a perfect setting. The first (and in some cases, the second and the third) of a long series of lobsters was enjoyed, together with other ingredients of a good picnic. Collecting in the kelp at the tide-bared base of the cliff followed the feast, and unscheduled entertainment was afforded by a pair of divers who, equipped with aqualungs, entered the water on an unannounced mission.

Dawn on Tuesday found a shivering group of collectors at Hilton Park on Little Bay (tidal estuary), 5 miles east of Durham; it is not recorded how many gallons of hot coffee were consumed nor how many doughnuts, but spirits lifted and sweaters were shed as the morning wore on. The area about the beautiful little park was thoroughly combed before the exodus back to town was made at mid-morning.

Papers read at the afternoon session:

THE POSITION OF LINNEAUS AS A BINOMIAL WRITER

HENRY DODGE
Scarsdale, N. Y.

Read by title; (Bequaert).

(Abstract)

In accepting the tenth edition of the "Systema naturae" as the starting point of binomial nomenclature the suggestion is made that we should distinguish between our own practical acceptance of the work and Linnaeus' conception of it. Viewed realistically, the system of nomenclature used in the "Systema" was only a transition between the older polynomial specific names of his predecessors and the perfected binomial system of his successors.

HYBRIDIZATION AMONG MOLLUSKS

PAUL BARTSCH
U. S. National Museum

Read by title; (Abbott).

(Abstract)

Recently a new complex of Pliocene Pyramidellidae from St. Petersburg, Florida has been discovered. It is reminiscent of the complex of forms of both a West Coast and New England recent grouping in its degree of variation. Such hybrid colonies are common among the Bahaman *Cerion* colonies I transplanted to the Florida Keys and in several other *Cerion* colonies I have observed in my studies on this group.

Near Washington, D. C. colonies of *Goniobasis multilirata* and *G. virginica* have met and hybridized producing a welter of forms. Transportation of specimens on barges carrying coal has produced similar hybrid situations in parts of the Chesapeake-Ohio canal. Such examples of hybridization are common throughout the organic world and often produce extreme inflorescenes of individuals which often extend their range far beyond that of neighboring stable forms.

[The pliocene pyramidellidae combined features of two subgenera, *Pyrgiscus* and *Strioturbonilla* and the variation was illustrated on several excellent slides.]

PILSBRY AND BRUNSON ON *MAGNIPELTA MYCOPHAGA*

HENRY A. PILSBRY
Academy of Natural Sciences, Philadelphia

(Abstract)

In 1948 Dr. Pilsbry received a young specimen of a remarkable slug from near Lolo Pass in the Bitter Root mountains of Idaho. Shortly after publication as a new genus and species (Nautilus 67: 37-8, 1953), Prof. R. B. Brunson of the University of Montana collected a large number of these slugs on Deer Creek near Missoula, Montana. Complete details will soon be published.

Dr. Pilsbry showed slides of the anatomy of the slug and explained its taxonomic position. Photographs of the active animal and a contracted one were passed around while detailed information on its habitat was read from Dr. Brunson's notes.

Teare: "Was there color to the mucus? Did the collector take a smear?"
Pilsbry: "He didn't say; I didn't see the live specimen myself."

MALACOLOGICAL OBSERVATIONS IN WESTERN CUBA

Morris K. Jacobson
Rockaway Beach, N. Y.

(Abstract)

Although the area about Viñales in Pinar del Río Province in Western Cuba has been well known to collectors and visited by large numbers of malacologists, there is little reliable information regarding the distribution of the snails in the region. What is needed is first of all a reliable map with fixed names, since many localities have several names and the same name is applied to many different areas. Plotting the colonies of a single species such as *Viana regina* Morelet, *Emoda sagraiana* Orbigny or *Jeanneretia parraiana* Orbigny will doubtlessly lead to important conclusions regarding true affinities, evolution and proper nomenclature. On a recent trip there, several interesting observations were made. In one case a *Oleacina straminea* Férussac was detected in the act of scraping a hole in the shell of a *Rhytidothyra bilabiata* Orbigny to get at the animal inside. Similar holes were subsequently found in many dead shells. *Proserpina nitida* Sowerby of Jamaica in life covers the entire shell with a mantle much in the manner of the marine Cypraeidae, whereas the Cuban *P. depressa* Orbigny apparently does not possess such a mantle. This fact might be a better characteristic upon which to construct the subgenera than the ones now being employed. Live specimens of *Cupulella dominguezi* Jaume & Aguayo were seen in the type locality near La Palma to move about dragging their comparatively large shell with the spire downwards. This fact has not previously been noted in the literature. Even though Viñales is apparently so well known, there are countless opportunities for original and important work there. Living conditions are good and accommodations reasonable. It is possible to collect in the area with a minimum of physical discomfort.

Mr. Jacobson's Kodachrome slides provided a travelogue which entranced his audience.

Bequaert: "I am especially interested in your report on how *Oleacina* bores into other mollusks." Pilsbry: "Our *Haplotrema* has quite similar habits, making a hole behind the operculum."

A MOLLUSCAN STUDY OF MISSION BAY'S NEWLY FORMED SHORE LINE AT SAN DIEGO, CALIFORNIA

Roy L. Morrison
San Diego, California

(Abstract)

Prior to 1949 Mr. Morrison had made a survey of Mission Bay which at that time had a shoreline of 7 miles, acres of mud flats and winding sloughs and was transversed by the San Diego River which empties into the Pacific Ocean. In this survey a total of 169 species of mollusks were collected.

In 1949 the San Diego River Flood Control and the Mission Bay Development Project was begun. This project changed the physical properties of Mission Bay to such an extent that the marine life was greatly altered. Old habitats were completely destroyed as were the molluscan forms inhabiting these areas. The new shoreline is over thirty miles in length. Because of these changes a second survey was made, beginning with the first dredging operation and continuing up to 1954.

More than 50 more species were found in the first survey than in the second. However, several species that had not been taken prior to the dredging of the Bay were collected during the second survey; evidently these came into the bay from the ocean by way of the greatly enlarged bay channel.

Mr. Morrison's paper was illustrated by two maps of the area; time did not permit discussion.

A SHORT HISTORY OF THE MOLLUSK COLLECTION OF THE U. S. NATIONAL MUSEUM

Harald A. Rehder
U. S. National Museum

Read by R. Tucker Abbott.

The photoslides which accompanied this paper pictured some of the curators of the past and a part of the collection as it appears today.

With this paper the afternoon session was completed. Again there was a scramble to dress for a change of scene. It was a most welcome one for the delegates were entertained by General Frank R. and Dr. Jeanne S, Schwengel at a cocktail party and shore dinner. Two busses transported the party to Wentworth-by-the-Sea, a famous resort hotel at Newcastle, N. H. Following a social hour at the hotel the busses were re-boarded for the short trip to the beach where awaited a shore dinner de luxe. Properly attired in bib and cap the crowd to a man fell upon lobster and chicken, fish chowder and clams and a score of other viands; few of these were passed up for the sea air does give one an appetite.

It was a jaded but determined crowd which made the trek to collect at Rye Harbor on Wednesday morning, but again coffee and doughnuts wrought their magic and were consumed in quantity by people who but a few short hours before had expected never to be hungry again.

This spot offered the best collecting of the meeting, albeit the wettest. The extreme low tide exposed rocks heaped with wet (and slippery) kelp which harbored an abundance of mollusks together with other interesting denizens of the sea. An unusual feature was a peat bed, beset with granite boulders, exposed only at low tide; this relic of an ancient meadow afforded a chance to collect two species of boring mollusks, exposed in quantity by Prof. Moore who wielded the shovel. And he had brought but one shovel, for, as he explained, "No need to dig up the whole place; the peat won't be renewed in our time and I like to bring my pupils down here."

All too soon came the call to leave, for a mid-morning session of papers had been scheduled. At 10:30 President Bequaert rapped for order and introduced the following:

VARIATIONS IN THE OLIVE SHELLS OF WEST MEXICO

Howard R. Hill
Los Angeles Museum

(Abstract)

In nearly every family of univalve mollusk, certain species show considerable variation in color, size and shape. In the Olive Shell family, there are a number of variable forms found on the west coast from Mexico to Chile. One species in particular, *Oliva spicata spicata* Röding, is so variable that twenty-eight names have been applied to it and its nine varieties. Since no two authorities have agreed on the nomenclature for these forms, students and collectors have long been confused as to the proper scientific names to be used.

Oliva spicata spicata Röding is a common species, ranges from West Mexico to Panama Bay. According to color or form, the following varieties are recognized: *O. s. violacea* Marrat; *O. s. pindarina* Duclos; *O. s. fuscata* Marrat; *O. s. cumingi* Reeve; *O. s. hemphilli* Johnson; *O. s. venulata* Lamarck; *O. s. polpasta* Duclos; *O. s. subangulata* Philippi; *O. s. obesina* Duclos. *Oliva juliettae* Duclos was formerly considered a variety of *O. spicata venulata* Lamarck and *Oliva incrassata* Humphrey has two color varieties: *O. i. nivea* Pilsbry and the other, solid orange, which is un-named. Five varieties of *Oliva peruviana* Lamarck have been described: *O. p. livida* Johnson; *O. p. subcastanea* Vanatta; *O. p. castanea* Johnson; *O. p. fulgurata* Martins; *O. p. coniformis* Philippi. *Olivella undatella* Lamarck is variable while *Olivella volutella* is usually unicolor with one banded variety: *O. v. zonalis* Lamarck. *Agaronia testacea* Lamarck shows considerable color and pattern variation, but the following species show but little variation: *Oliva porphyria* Linne; *O. kaleontina* Duclos; *O. splendidula* Sowerby; *Olivella columellaris* Sowerby; *O. dama* Mawe; *O. gracilis* Brod. & Sowerby; *O. inconspicua* C. B. Adams; *O. tergina* Duclos; *O. versicolor* Marrat; *O. petiolita* Duclos; *O. anazora* Duclos.

Dr. Hill presented Kodachrome slides of the various Olividae under discussion and supplied his interested audience with copies of his paper. Also on display were cases of shells including the unusual white O. *incrassata nivea* Pilsbry.

Pilsbry: "There is an enormous amount of work to be done to determine the status of the varieties set up for this family." Bequaert: "Yes, they are as variable and as much of a puzzle as the Cypraeidae." Hill: "I think that most of these varieties will stand, since they are found together with the typical."

SMALL BEGINNINGS

Adlai B. Wheel
Syracuse, N. Y.

No stranger to A.M.U. gatherings, Mr. Wheel is well known for his work with various boys' clubs in Syracuse. He entertained his fellow-members with slides depicting some of his 3800 boys engaged in various activities, not the least of which is a museum staffed by the boys themselves and stocked with the donations of organizations and individuals. He explained that his purpose was twofold: a plea for duplicate material of any kind from his listeners, and a greater plea that people be patient with all young people. "The kind of answer a boy receives may determine the direction of his next step."

Dr. Bequaert observed that from such groups as Mr. Wheel's may come future members of this organization and added his plea that such work be supported.

SOME ZOOGEOGRAPHIC PROBLEMS AMONG BRACKISH WATER MOLLUSKS

Joseph P. E. Morrison
U. S. National Museum

(Abstract)

Among the Salt - marsh Snails, that is the Family Ellobiidae, there are many cases of extremely wide geographic distribution of species. In the first place, all the Salt-marsh Snails do not live exclusively in salt or brackish marshes. In certain places where there are neither salt marshes nor mangroves, such as certain rocky western shores of Panama, and on the

coral atolls of the Pacific, these primitive Pulmonate Land Snails live under the cobbles and drift of the island beaches. That is, they seek shelter there under the layers of rock cobbles near or just above the nomal high tide line during the day's heat of the tropical sun, and wander out at night all over the beach rocks, etc. The three commonest species of Ellobiids found at Bikini in the Marshall Islands and also at Raroia in the Tuamotu Islands, *Melampus luteus* Quoy & Gaimard, *Melampus violus* Lesson, and *Pira fasciata* Deshayes, all have a known species range from South Africa (or Mauritius) all the way eastward to the Tuamotus (or Easter Island). A second species of *Pira,* however, is different. This small, pale white species, *Pira mucronata* Gould, has long been misunderstood. It was rediscovered in 1952 in large populations under the coral cobbles of island beaches at Raroia Atoll in the Tuamotu Islands. It differs in habit from its relatives by remaining in the interspaces under the rocks and gravel of these coral cobble beaches of the Tuamotu Islands, both day and night.

One of the smallest, perhaps the smallest in size of all the genera of Ellobiids was also found sparingly but definitely living on these same island shores. The genus *Microtralia* is now known from both the Atlantic and the Pacific Oceans. *Microtralia occidentalis* Pfeiffer is recorded from Florida and the West Indies, while the very similar *Microtralia lucida* Pease is known from Bikini in the Marshall Islands, Lifu in the Loyalty Islands, the Hawaiian Islands, and from Raroia in the Tuamotus. This gives us one more example of an Ellobiid genus that is found in the tropical and subtropical zones of both oceans, and perhaps attests to the antiquity of the genus. It seems likely that these forms, living now on both sides of the Isthmus of Panama, must date from before the middle of the Miocene when this isthmus was raised to effectively separate the two oceans. In other words, the genus *Microtralia,* like some of its relatives, is probably more than 40 million years old!

In the only exclusively United States species of the family, *Detracia floridana* Pfeiffer, we have recently gotten confirmation of the pelagic stage in the life history. This at least partly explains the wide geographic distribution of certain species. An interesting problem concerning populations of this species was observed on August 1st, 1954. The egg-laying season of *Detracia floridana* in Chesapeake Bay localities was observed to end about the 1st of July in both 1953 and 1954. On the 1st of August, 1954, specimens of the 1954 brood, already finished with the pelagic stage, and settled as young snails on shore in the region of the high tide line, were observed and collected from three different localities in the upper Chesapeake Bay area, in Kent County, Maryland. On the same day, August 1st, 1954, *Detracia floridana* adults, with eggs in their habitat, were collected in the Bombay Hook Wild Refuge on the western shore of Delaware Bay. What factor can explain this one month's differential in the end of the egg-laying season, in the two bays, at localities separated by less than ten miles difference in north latitude? It seems logical that these two areas in Chesapeake and Delaware Bays probably have almost identical temperature maximums, minimums, and means. More than 50 miles difference in latitude has not been observed to produce any difference in the end of the breeding season in separate local populations in Chesapeake Bay waters.

In the American Corbiculidae, the larger brackish-water clams, there are some very interesting generic distinctions. *Polymesoda,* typified by the United States species *Polymesoda caroliniana* Bosc. which has a range from the James River of Virginia to Texas, includes only four other known species. These are all from the Atlantic shores of continental America, the southernmost being recorded from the Guianas. This genus has the deep and separate pallial sinus described as typical for all American members of the family, and a smooth shell covered with finely crinkled, velvety epidermal folds along the growth lines. *Neocyrena* is similar to *Polymesoda,* but it has those epidermal folds filled with shell material, so that the epidermis is smooth and shiny, while the shells are regularly and evenly corrugated. The species of *Neocyrena* known are all Central and South American, but members of this genus occur in both Atlantic and Pacific waters. Any one species is either Atlantic or Pacific. The West-american genus *Egetaria* is similar to the East-american *Polymesoda* in possessing the crinkled epidermal folds over a smoothish shell, but its epidermal "velvet" is only about half as prominent as that of *Polymesoda.* In contrast, the pallial sinus of *Egetaria* is very small, hardly separated from the posterior adductor muscle scar. On further examination we find that the West-american *Egetaria* are almost identical to the Malaysian, Indonesian, and Philippine Island genus *Geloina.* The epidermal and pallial sinus characters of these two are so nearly identical, that it is possible they may eventually prove to be one and the same genus. If this be so, we would have in this case another good example of relict groups of one brackish-water genus in geographically widely separate areas.

The other family of brackish-water claims, the Cyrenoididae, is a small group of species of smaller size, considerably less familiar to even most malacologists. These little round clams externally resemble members of the genus *Musculium* of the (freshwater) family Sphaeriidae, but there are only cardinal teeth on the hinge of *Cyrenoida.* In addition, the habitat of *Cyrenoida* is always in brackish waters. The type species, *Cyrenoida dupontia* Joannis is known from West Africa. All other known species are American, living on both East Pacific and West Atlantic shores. Species are known from the region about Panama City, and the Pearl Islands in the Gulf of Panama. On the Atlantic side, these little clams are known from Purto Rico, Cuba, and the Bahamas, in addition to one species in the United States. The U. S. species, *Cyrenoida floridana* Dall, has long been known from various localities on both east and west coats of Florida, and from the coast of Georgia. In recent years, Ralph W. Jackson of Cambridge, Maryland, F. M. Uhler of the U. S. Fish and Wildlife Service, and the writer, have collected the species *floridana* from six different localities on Chesapeake Bay (from Northampton and Accomac Counties on the eastern shore of Virginia, and from Dorchester, Anne Arundel, and Queen Anne's Counties, Maryland). Just a few days ago (August 1st, 1954) it was my good fortune to find a thriving population of this species in Bear Swamp in the Bombay Hook, Fish and Wildlife Refuge, on Delaware Bay.

Having personally collected *Cyrenoida* clams alive on twelve different occasions, including the northernmost and the southernmost American localities known to me to date, it is easy to understand how they are so easily overlooked, and why they are so uncommon in shell collections. At least the northern populations of *Cyrenoida floridana* are apparently intertidal in habitat, and live in the more brackish water zones, that is toward the freshwater or land side of the salt-marshes. This little clam has been found (in nearly every case of which I know the details) either in the same spot, or in the same general swamp habitat, in company with *Detracia*

floridana, or Melampus bidentatus lineatus, or both. The Cyrenoida is to be found just under the surface of and in the rotting grasses matted around the bases of or between the clumps of grasses or reeds in the swamp areas in which Detracia floridana may be found abundantly. The Detracia snails may be readily visible, active on the surface of the mud or grasses when their sheltering cover is parted or moved to one side. The pale whitish Cyrenoida clams should be searched for in the same habitat, just below the top wet layer of rotting grasses or sedge leaves, under cover, but still out of the water (that is, intertidal) whenever the tide is low. The case of Cyrenoida floridana gives us another good example of a subtropical form living far to the north in favorable habitats of the Atlantic coastal plain.

McMichael: "How can the same species of Ellobiidae occur in Bikini and Hawaii?" Morrison: "I believe such extremely wide ranges are possible because of the pelagic stage in the life history of many members of the family." Clench: "How long is the free-swimming period of *Detracia?*" Morrison: "I was able to see the larvae swim away from the egg-mass, and I have pictures to prove this larval stage. The only observation is that these larvae just about double their size from the time they leave the egg-capsule, until the time they settle as young snails on the shore. No one knows how long this free-swimming (growth) period takes." Clench: "There is great need to trace the life histories of our mollusks; we need more such data to back up our theories." Abbott: "Let's not forget that some mollusks which do not pass through a pelagic stage nevertheless have wide geographic distribution."

(A break for lunch; papers resumed at 1:30 P.M.)

THE GENUS MELONGENA

Ruth D. Turner
Museum of Comparative Zoology

(Abstract)

Restricted to the tropical and south temperate portions of the Western Atlantic and the Eastern Pacific, the genus *Melongena* is comprised of three species: *M. melongena* L., *M. patula* Brod. & Sow., and *M. corona* Gmelin. The latter species is exceedingly variable and we recognize four sub-species.

Distribution of *Melongena* is an interesting study. *M. patula* is limited in range from Mexico to Equador; *M. melongena* has an erratic and interesting distribution in the West Indies, while *M. corona* and all but one of its sub-species is restricted to Florida and the Northern Gulf coast. Of these, *M. c. bispinosa* Philippi poses a real problem in its occurrence in Yucatan. This is discussed at length and a new sub-species is to be described in a forthcoming issue of "Johnsonia."

Kodachrome slides of *Melongena* species followed this paper.

Teskey: "One of the specimens appeared white; was it an albino?" Turner: "Yes, albinism does occur in this family." Pilsbry: "Were the specimens I sent from Lake Worth *M. altispira?*" Turner: "Yes." Abbott: "The National Museum has specimens from Yucatan." Bequaert: "Collectors down there should be alerted to watch for *Melongena.*" Michelson: "Are the egg capsules firmly attached to bottom objects?" Turner: "Yes indeed; they come up in a continuous string. You can't explain the errotic distribution that way." Bequaert: "The current would be against it, too." Pilsbry: "Have you considered the Pliocene forms in this study?" Turner: "Yes, and we can match them almost exactly with the recent forms."

DAN LANGFORD

JEANNE S. SCHWENGEL
Scarsdale, N. Y.

(Abstract)

This was a most interesting letter from Dr. D. Thaanum of Honolulu, summarizing the life of his brother-in-law, Dr. Dan Langford whose name has been given to many shells of his adopted country, Japan. Born in North Dakota in 1882, he was brought to Hawaii at the age of six when his family settled there. A brilliant student, he prepared for a teaching career but later entered the employ of the Territorial Board of Agriculture. After World War I he went to Japan as waterfront reporter for a Japanese-English daily, was later employed as teacher of English at Keio University. Arrested by the Japanese at the beginning of World War II he was held for six months in solitary confinement, unaware that his native and adopted countries were at war. Finally released as an exchange prisoner, he worked for and with the U. S. Navy during the last months of the war. Later he was sent to Guam as entomologist for the Trust Territory, finally residing again in Japan which he loved and where he died. Dr. Thaanum's letter describes how he had watched the awakening of Langford as boy and man to the world of Nature, and how during Dr. Langford's life a day in which he did not obtain a new shell was a day wasted.

Copies of two citations from the U. S. Armed Forces accompanied this letter, and a letter to Dr. Schwengel from Dr. Langford's widow was read by Mr. Yoshio Kondo since it was in Japanese.

GENE EXCHANGES IN FRESHWATER MUSSEL POPULATION

DONALD F. MCMICHAEL
Australian Museum, Sydney, Australia

(Abstract)

When modern species concepts are applied to freshwater mussels, the reproductive relationship between adjacent isolated populations must be considered. Populations which are reproductively isolated can be considered different species, but populations of the same species will be capable of interbreeding. If two populations are effectively isolated for a sufficiently long period of time, we should expect some genetic divergence to be apparent.

Geographical isolating barriers between freshwater mussel populations are the land masses between neighboring lakes and rivers, and the sea between the river mouths. The same species of mussel is often found in a series of streams which have been separated from each other continuously for long periods of time, possibly since the middle *Miocene,* and where there has been no recent glaciation. If isolation between the populations were complete, we should expect a great deal of genetic divergence, and many subspecies.

Since this is not the case, we must assume that the isolating barriers are broken at a sufficient rate to prevent speciation. This gene exchange is probably effected by aquatic birds and insects carrying small or adult mussels on their feet, feathers or legs. Species may sometimes be introduced to new localities as glochidia infecting a school of fish, transported by cyclonic winds.

The previous literature of Van der Schalie (1939, 1945) and D. W. Johnson (1939, 1941, 1942) was reviewed and there seems to be abundant evidence that bird transfer of mussels is not only theoretically probable, but actually occurs.

From this theory, we can further suggest that new species might arise by a similar transfer over a much greater distance. Island species may also have arisen in this manner.

Pilsbry: "Stream capture over the past million years might account for some of this; it is by no means simple to explain, especially in the New Zealand cases. Considering transferal by birds, you must start with gravid females." McMichael: "Why could not very small mussels be so transferred?" Pilsbry: "Then you'd need a pair." McMichael: "I mean a small population which could be transported on one trip." Pilsbry: "Or maybe the transfer was accomplished by humans, say by traveling Maori tribesmen who took them for food. It is very confusing; our Tennessee-Alabama fauna could have been so mixed-up but was not." Jacobson: "Migration paths of birds have been studied in this connection and in the case of some of our transplanted Staten Island unios have been found to coincide." Abbott: "Again, maybe the birds took that route because of the presence of the clams as food; it's a case of the chicken or the egg. And how long can a clam remain alive if held open?" Pilsbry: "It's a long flight from Australia to New Zealand." McMichael:: "I think you should consider small forms, not big birds and big clams." Clench: "We have a specimen of *Elliptio* clamped on the foot of a duck which was shot. The clam was full-grown though immature." Morrison: "In Raroia I saw a golden plover with a small clam dangling on one foot; it was alone so maybe was delayed by this in its usual migratory flight to Alaska." McMichael: "You are still thinking of great distances; in Australia it is a short hop from one tributary to another."

An intermission of fifteen minutes at this time gave delegates an opportunity to examine living specimens of several of the New England nudibranchs which Prof. Moore had set up under microscopes in a laboratory, as well as a series of color photographs of these exquisite mollusks.

THE TRIALS, TRIBULATIONS AND REWARDS OF A SHELL DEALER

Mrs. F. Knight Hadley
West Newton, Mass.

(Abstract)

Since a shell dealer must of necessity be a shell lover, the rewards far outweigh the trials of the trade. Chief among the latter is the uncertainty of obtaining high-grade material from unknown collectors or dealers; often time and shipping costs are wasted on someone with but inferior shells to offer. Another problem is maintaining a price commensurate with the ever-lessening rarity of certain species. And nomenclature brings trouble when customers order shells by the common names which so often exist but locally.

Rewards come with every contact with a satisfied customer. Lasting friendships have come as a result of a relationship which began as routine correspondence. One does not get-rich-quick in the shell business, but any collector knows that life holds much more than riches.

Kodachrome slides pictured the Hadleys themselves on collecting trips and some of the choice shells in their personal collection.

GROWTH STUDY OF SALTMARSH SNAILS

PAUL A. HOLLE
University of New Hampshire, Durham, N .H.

Read by title because of lack of time.

(Abstract)

The growth rates of saltmarsh snails *(Melampus bidentatus* Say) are unrecorded. Therefore an experiment was designed involving 1633 specimens from three saltmarshes in New Hampshire and Massachusetts which were collected, measured, marked and released in May, 1953. Six months later (October, 1953) 50 specimens were recovered. Having erroneously anticipated rapid growth, the technique used proved crude and inaccurate in that the greatest increase in total shell length was 1 mm. Interchange of specimens from several ecologically different sites suggested that drainage rate of fresh water from the saltmarshes in some manner affect the growth rate and maximum size of the specimens.

A VARIATION OF *ELLIPTIO COMPLANATUS* SOLANDER

HERBERT D. ATHEARN
Taunton, Mass.

(Abstract)

During the last century, Isaac Lea gave specific recognition to a large number of variations of *Elliptio complanatus.* Among these were *Elliptio roanokensis* and *Elliptio northamptonensis.* These titles are synonymous. This variant differs from the typical *complanatus* in that it is larger, more elongated, subrhomboid rather than rhomboid, more compressed and usually exhibits a shallow radial depression in front of the posterior ridge.

The form is sometimes found in the generally shallow sections of streams where the water is flowing fairly rapidly over a packed sand and gravel bottom. Records range from the Michipicoten River near Lake Superior in Ontario to Lime Kiln Creek in Coweta County, Georgia, where the waters flow into the Gulf of Mexico by way of the Apalachicola River system.

A. E. Ortmann, in his A MONOGRAPH OF THE NAIADES OF PENNSYLVANIA, using the title *violaceus* in place of the now recognized title of *complanatus* states, "The ability of *Elliptio violaceus* to live everywhere under a great variety of environmental conditions undoubtedly accounts for its great variability, as well as its tendency to develop many different phases, which may turn up anywhere under proper conditions, but which do not lead to the development of geographical races, at least in our territory." In large streams where habitats such as long sandbars form an abrupt line of demarcation between them and an adjacent, perhaps somewhat deeper mud or clay bottom, the variants within the species are usually quite distinct. In smaller streams where there is an equal contrast in habitat, although on a smaller scale, the variants within the species will merge with one another. Where a stream is found containing a consistent environment, one will find *Elliptio complanatus* to be quite unvarying in shape, excepting of course, where mechanical obstructions have distorted the shell.

When such individual environments become permanently separated by topographic or climatologic changes, the species seems particularly adaptable to transform itself into various constant forms which must be identified as subspecies and in more advanced cases, as species. This is the case with our Floridian *Elliptios*.

Such permanent changes of environmental conditions have not taken place where the variant *roanokensis* or *northamptonensis* exists in the St. Lawrence River and the Atlantic Coastal Plain systems. In this instance therefore, there appears to be no scientific purpose in giving this variant specific or sub-specific rank.

Read by title because of lack of time.

Since the afternoon was drawing to a close, Dr. Bequaert announced with regret that two scheduled papers could not be delivered, since the time left was only sufficient for the annual business meeting. He then called for the report of the business transacted by the Executive Council at the meeting of that body on Monday A.M.

A cash balance of $399.86 and a life membership fund of $177.97 was reported, the treasurer's report approved as read.

The secretary reported that the Council had been notified that 175 members had voted for adoption of the new Constitution, one against, and that said Constitution was therefore in force as of that date. A petition by the secretary that a new office, that of Publications Editor, be created was heard and favorably received. Since this act will involve a change in the Constitution a vote of the membership must be taken; President Bequaert appointed Prof. George M. Moore to act as Publications Editor pro tem. Upon notification by the Treasurer that the annual dues of $1.00 are inadequate to meet current expenses, it was moved, seconded, and carried that a by-law be added to the Constitution whereby annual dues are increased to $2.00, additional members of a family eligible to become members for $1.00 each. It was recommended by the Council that the life membership provision in the Constitution (Article 3, line 5, 6) be changed to read: "Life membership may be purchased for the equivalent of twenty years' annual dues, with no further payment required." This too must be voted upon by the membership as a whole. It was tentatively decided that the 1955 meeting will be held in New York City, the American Museum of Natural History and the New York Shell Club to act as co-hosts. Date and details will be announced.

The following panel of nominated officers was placed before the delegates:

President	Morris K. Jacobson
Vice-President	Allyn G. Smith
Second Vice-President	Ralph O. Fox
Secretary-Treasurer	Margaret C. Teskey

Councillors-at-Large — R. Tucker Abbott, Anthony D'Attilio, Yoshio Kondo, Ruth D. Turner

The secretary's report was accepted as read, and it was moved, seconded and carried that the nominated panel be declared elected by acclaim.

President Bequaert voiced the gratitude of every person present when he thanked Prof. Moore for his hospitality and the detailed planning which had caused events of the three days to proceed so smoothly. President Bequaert then introduced his successor. President Jacobson added his thanks to those of Dr. Bequaert, remarking as he closed the business meeting that the New York folks have been set a high goal as they plan for next year's meeting.

Last on the scheduled program was the annual banquet which in New England could not be other than a shore dinner. The scene shifted to Simpson's Pavilion. Place cards were decorated with boxed specimens of *Mesodesma arctica* Gould, a bivalve collected in the shifting sand of the beach at the mouth of a tidal estuary, the Hampton River. Once again King Lobster reigned and once again he was deposed amid a rubble of cracked and broken shell.

The meal over, guests retired to the porches while the tables were cleared and seats re-arranged. It had been whispered that a treat was to come and the rumor was proven true when pretty Kiyoko (Mrs. Yoshio Kondo) danced a series of hulas to the accompaniment of records which she had brought from her home in Hawaii.

The second half of the evening's entertainment was provided by Professor C. F. Jackson, retired Dean and Professor of Zoology of the University of New Hampshire. He transported his audience to quite another scene, the area north of the St. Lawrence where as a mammologist he had made several collecting trips. By slides and anecdotes he made hardship sound enjoyable, and it was a rude awakening when the lights came on and it was time to say goodbye all around.

It is a temptation to label each meeting "the best ever" as it occurs; let it be said that the Durham meeting was one of the best and that it will be a long time before those who attended forget the completely enjoyable occasion.

MARGARET C. TESKEY, *Secretary*

REGISTRATION, TWENTIETH ANNUAL MEETING

R. Tucker Abbott, U. S. National Museum, Washington, D. C.
Mrs. Eliot Armstrong, Buffalo, N. Y.
Mr. and Mrs. Herbert Athearn, Taunton, Mass.
Dr. and Mrs. H. B. Baker, Univ. of Penn., Philadelphia
Dr. and Mrs. Joseph Bequaert, Museum of Comp. Zool., Cambridge, Mass.
Mr. and Mrs. Alvin C. Bippus, Jr., Toledo, Ohio
Mr. and Mrs. Alger P. Blaine, Springfield, Mass.
Dr. Merrill E. Champion, Wakefield, Mass.
Austin W. Cheever, M.D., Boston, Mass.
Martin Chicoine, New York City
Mr. and Mrs. Arthur H. Clarke, Jr., Watertown, Mass.
Dr. and Mrs. William J. Clench, Museum Comp. Zool., Cambridge, Mass.
Mrs. Lilias F. Cockerell, Sanibel, Florida
Mrs. Z. W. Craine, Norwich, N. Y.
Mr. and Mrs. Anthony D'Attilio, Valley Stream, Long Island, N. Y.
Lawrence D'Attilio, Valley Stream, Long Island, N. Y.
Sandra D'Attilio, Valley Stream, Long Island, N. Y.
Dr. Ralph W. Dexter, Kent State University, Kent, Ohio
Mr. and Mrs. F. Knight Hadley, West Newton, Mass.
Dr. and Mrs. Howard R. Hill, Los Angeles Museum, California
Mrs. Fred St. John Hoffman, Buffalo, N. Y.
Paul A. Holle, University of New Hampshire, Durham, N. H.
Mr. and Mrs. Morris K. Jacobson, Rockaway Beach, New York
Mr. and Mrs. Richard I. Johnson, Needham, Mass.
Margaret Kain, Cambridge, Mass.

Rev. and Mrs. Albert B. Kettell, Princeton, Maine
Mr. and Mrs. Yoshio Kondo, Bernice Bishop Muesum, Honolulu, T.H.
Bernice Leland, Boston, Mass.
Mr. and Mrs. Clinton V. MacCoy, Norwell, Mass.
Gordon K. MacMillan, Pittsburgh, Pa.
Donald F. McMichael, Australian Museum, Sydney, Australia
Arnon L. Mehring, Hyattsville, Md.
Harvey G. Meyer, University of Tennessee, Knoxville, Tenn.
Edward H. Michelson, Museum of Comp. Zool., Cambridge, Mass.
Commander and Mrs. Alexander Moberg, New Bedford, Mass.
Dr. George M. Moore, Univ. of New Hampshire, Durham, N. H.
Dr. and Mrs. Joseph P. E. Morrison, U. S. National Museum, Washington, D. C.
Lilian B. E. Morrison, Falls Church, Va.
Michael P. E. Morrison, Falls Church, Va.
Roy L. Morrison, San Diego, Calif.
Mr. and Mrs. Eugene Musial, Buffalo, N. Y.
Dr. and Mrs. Juan J. Parodiz, Carnegie Museum, Pittsburgh, Pa.
Dr. Henry A. Pilsbry, National Academy of Science, Philadelphia
Murray E. Reed, St. Petersburg, Florida
Dr. and Mrs. Harald A. Rehder, U. S. National Museum, Washington, D. C.
Dr. Henry D. Russell, Dover, Mass.
Dr. Jeanne S. Schwengel, Scarsdale, N. Y.
Mrs. Mary Shephard, Detroit, Mich.
Mr. and Mrs. Alan Solem, University Museums, Ann Arbor, Mich.
Edward A. Sossen, Museum of Comp. Zool., Cambridge, Mass.
Mrs. Emery Swan, Durham, N. H.
Mrs. Margaret M. Teare, Buffalo, N. Y.
Mrs. Margaret C. Teskey, Buffalo, N. Y.
Harriet W. Thomson, Eugene, Oregon
Mr. and Mrs. Fred Tobleman, Newark, N. J.
Dr. Ruth D. Turner, Museum of Comp. Zool., Cambridge, Mass.
Capt. Adlai B. Wheel, Syracuse, N. Y.

CONSTITUTION OF THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the by-laws. Life membership may be purchased for twenty-five dollars, with no further annual dues required. Honorary

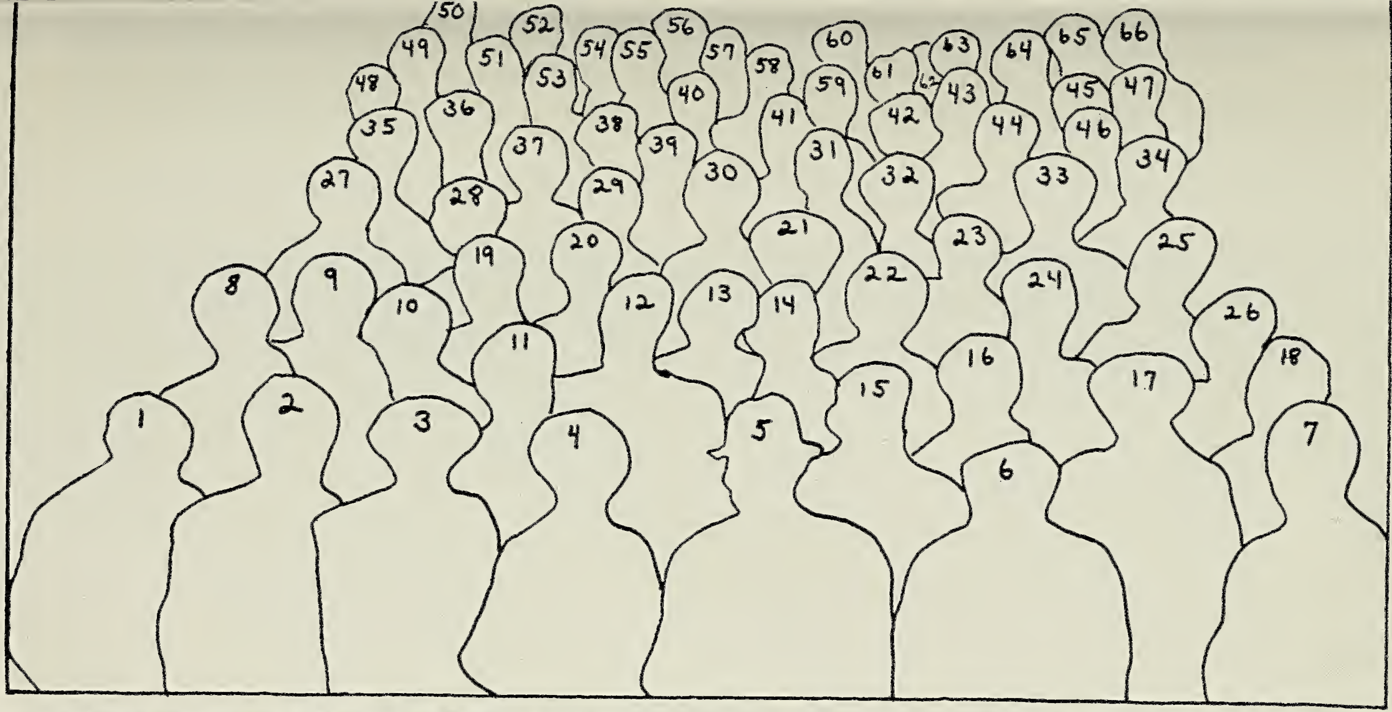
membership may be bestowed by a unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.

4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact by-laws that interpret this Constitution, and such by-laws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.
10. The official publication of the Society shall be the Annual Report of the A.M.U. which shall contain accounts of meetings, notices, and a list of active and honorary members.

BY-LAWS

1. The annual dues shall be one dollar.
2. (August 16, 1954) The annual dues shall be two dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.

DELEGATES TO TWENTIETH ANNUAL MEETING, AMERICAN MALACOLOGICAL UNION



1. Heathcote Woolsey, 2. Mrs. Albert Kettell, 3. Mrs. Eliot Armstrong, 4. Mrs. Margaret Teare, 5. Dr. Henry Pilsbry, 6. Mrs. Annie Hoffman, 7. Adlai B. Wheel, 8. Margaret Kain, 9. Mrs. Alger Blaine, 10. Alger P. Blaine, 11. Dr. Henry Russell, 12. Clinton V. MacCoy, 13. Mrs. M. K. Jacobson, 14. Edward Sossen, 15. Dr. Juan J. Parodiz, 16. Mrs. Lilas Cockerell, 17. Mrs. Herbert Athearn, 18. Mrs. Juan Parodiz, 19. Morris K. Jacobson, 20. Lilian Morrison, 21. Mrs. Joseph Bequaert, 22. Mrs. H. B. Baker, 23. Dr. Ruth Turner, 24. Dr. Jeanne Schwengel, 25. Mrs. Lottie Farnsworth, 26. Mrs. A. G. Moberg, 27. Mrs. Z. W. Craine, 28. Mrs. J. P. E. Morrison, 29. Mrs. Alvin Bippus, 30. Harriet Thompson, 31. Mrs. Alan Solem, 32. Mrs. F. K. Hadley, 33. Mrs. Howard Hill, 34. Mrs. Anthony D'Attilio, 35. Mrs. Harald Rehder, 36. R. Tucker Abbott, 37. Mrs. Clinton V. MacCoy, 38. Herbert Athearn, 39. Mrs. Margaret Teskey, 40. Roy Morrison, 41. F. Knight Hadley, 42. Mrs. William J. Clench, 43. Harvey G. Meyer, 44. Anthony D'Attilio, 45. Edward Michelson, 46. Dr. Ralph Dexter, 47. Yoshio Kondo, 48. Dr. Harald Rehder, 49. Arthur Clarke, Jr.,50. Richard I. Johnson, 51. Alvin Bippus, 52. Donald McMichael, 53. Martin Chicone, 54. Dr. Joseph Bequaert, 55. Arnon Mehring, 56. Murray Reed, 57. Gordon MacMillan, 58. Dr. Joseph P. E. Morrison, 59. Comm. A. G. Moberg, 60. Dr. Howard Hill, 61. Dr. William J. Clench, 62. Dr. H. B. Baker, 63. Rev. Albert Kettell, 64. Alan Solem, 65. Dr. George M. Moore, 66. Eugene Musial.

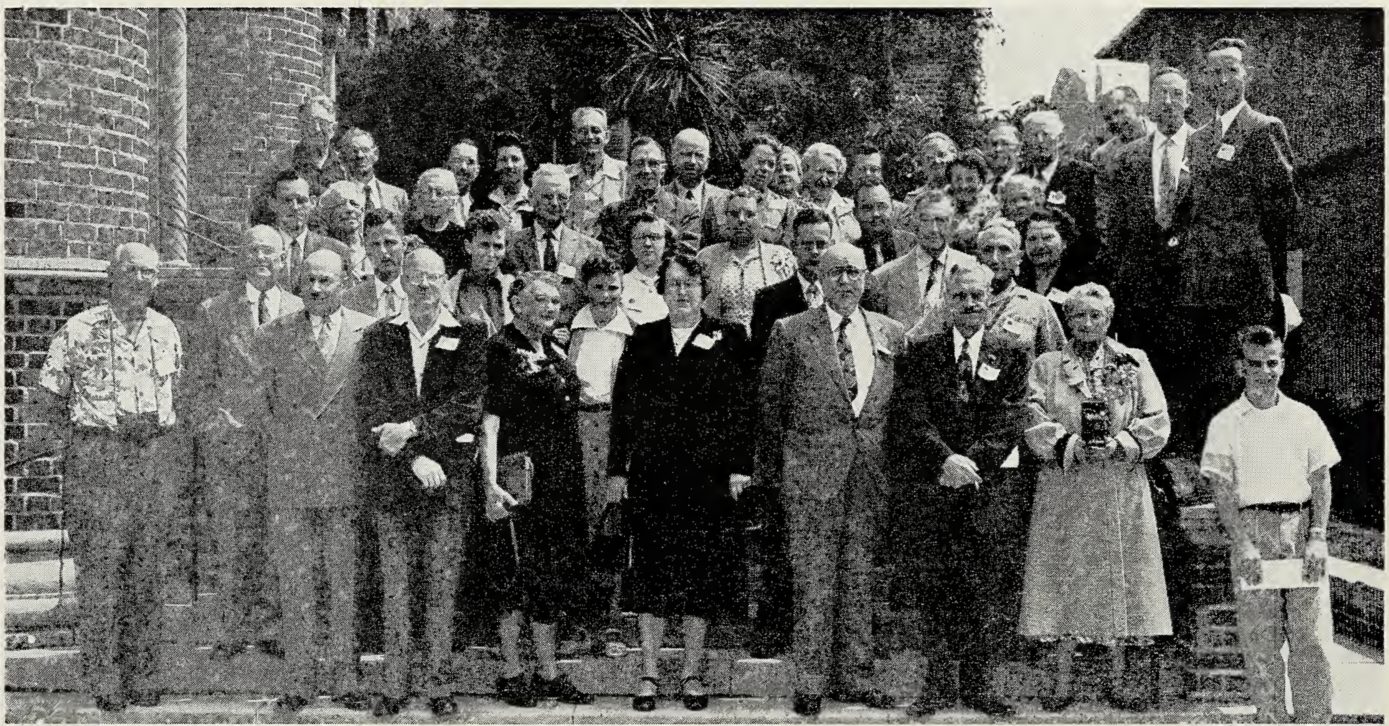


Photo by Gerry

DELEGATES TO SEVENTH ANNUAL MEETING, AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

1st row, left to right: C. Cate, W. O. Gregg, Ralph Fox, Elsie Chace, Ruth Coats, John Q. Burch, George Kanakoff, Mary Turver, Mickey McGaughey.
2nd row, left to right: R. S. Woglum, William Emerson, Elaine Griffith, D. L. Burford, Phil Spicer.
3rd row, left to right: N. T. Mattox, Mrs. L. Griffith, Helen Rost, Eva May Fletcher, Robert Alexander, Rose Burch.
4th row, left to right: E. P. Chace, Irene Baker, Tron Soot-Ryen, Robert Talmadge, Grace Alexander.
Last row, left to right: John Strohbeen, Ned Baker, William Steel, Lucille Zellers, Roy Summers, S. Stillman Berry, Ralph Bormann, Myra Keen, Mary Bormann, Anzel Spicer, Jeannie Cate, Carolyn Strohbeen, Howard Fletcher, Andy Sorensen,

THE AMERICAN MALACOLOGICAL UNION PACIFIC DIVISION

LOS ANGELES, CALIFORNIA — JUNE 18, 19, 1954

The annual meeting of the American Malacological Union, Pacific Division, was held at Founders Hall, University of Southern California, Los Angeles, California, June 18th and 19th, 1954. Sixty-four members and guests registered.

Chairman Elsie Chace presided at the meeting. She and Harry Turver, the program chairman, introduced the speakers.

During the business session the Secretary-Treasurer reported the balance on hand as being $48.19.

The minutes were read and corrected. The correction concerned a motion made during the 1953 annual meeting. The corrected motion was stated by Dr. W. O. Gregg as follows: Andrew Sorenson and Dr. S. Stillman Berry be elected to honorary membership in the American Malacological Union, Pacific Division.

The motion was made, seconded, and passed that the position of Secretary-Treasurer be made more or less permanent; e.g. the same person holding the position for more than one year.

The nominating committee proposed the following slate of officers: Chairman, Ralph O. Fox; Vice-Chairman, E. P. Baker; Secretary-Treasurer, Miss Ruth E. Coats. They were unanimously elected to office.

The Annual Banquet, under the supervision of Mr. and Mrs. Harry Turver, was well attended.

PROGRAM

Friday, June 18th

8:00 Breakfast, University Cafeteria.

9:00 Registration of members and guests.

9:30 Meeting called to order by chairman, Mrs. Elsie Chace. Appointment of nominating committee. Announcements. Presentation of papers:

Mr. Lindsay R. Winkler, Hancock Foundation, U.S.C. "Remarks on a new *Aplysia* from Southern California."

(Abstract)

On a collecting trip March 14, 1954 the author collected two five pound *Aplysia* from under rocks in the *Egregia* bed at Point Fermin, San Pedro, Calif. They were brought back to the laboratory at the Allan Hancock Foundation, University of Southern California, where they were kept in a single five gallon aquarium for a full month. They were fed on *Egregia* which appeared to be their principle food in shallow water. The animals spawned freely in the aquarium, their presence in shallow water apparently being for breeding purposes.

The animals were deep black with small white maculations. The parapodial lobes were united behind the large frilled excurrent siphon, thus being easily differentiated from the more common *Aplysia californica* Cooper, the parapodial lobes of which are not united behind the siphon.

The animal is negatively phototrophic, hiding under rocks by day and doing most of its feeding at night. They would usually spend the entire day in the corner of the aquarium, only becoming active in the evening.

This black *Aplysia* never could be induced to squirt its "purple ink", even though considerably handled — a marked contrast to *A. californica* Cooper, which needs little inducement to turn the water a vivid purple.

Recognizing this animal as a new species, it is being more completely described and named elsewhere. The group is also being made the subject of intensive research.

Dr. Lois W. Wong, School of Tropical and Preventative Medicine, Loma Linda, Calif. "Factors influencing egg laying in *Oncomelania,* snail intermediate host of *Schistosoma japonicum.*"

(Abstract)

Basic biology studies were made on *Oncomelania nosophora* and *O. quadrasi,* intermediate hosts of *Schistosoma japonicum.* The studies were conducted for the purpose of finding possible methods for controlling the snails. Included in the laboratory findings are the following:

1. *Oncomelania nosophora* females laid considerably more eggs on soil than on some of the other materials provided in the rearing containers. *O. quadrasi* laid most of the eggs on hard objects, such as brick and saucer wall.
2. The amount of water present in the containers effected an influence on egg laying. Most eggs were laid in saucers having the high or medium water level. Few were laid in saucers having the low level. Egg hatching was similarly affected.
3. In the same tests (2 above), it was found that most eggs were laid in saucers kept at 26° C. as compared to those kept at 20° C. and 32° C.
4. Flooding the saucer contents at intervals inhibited egg laying in *O. nosophora* and stimulated egg laying in *O. quadrasi.*

Dr. S. Stillman Berry, Redlands, California. "The distribution, past and present, of *Cryptochiton.*" (By S. Stillman Berry and Carl L. Hubbs.)

(Abstract)

The Great Chiton, *Cryptochiton stelleri* Middendorff, is sporadic in the Pliocene and is not uncommon in the cooler-water facies of the southern Californian Pleistocene. Its range then was probably at least as wide as and possibly exceeded its present distribution which extends from the islands of Hokkaido, Japan, and Sakhalin, Siberia, on the west, and the Pribilof Islands, Alaska, on the north, south and east to Monterey County, California. There are insufficiently supported records of its occurrence on San Miguel and San Nicolas Islands in southern California, and a single apparently valid record (Ritter, 1902) of its capture by dredging off San Diego. An important food of the early human inhabitants of much of its range, its shells are a rather common component of middens, and here its range is pushed southward at least as far as Punta Baja, Baja California. Between Punta Descanso and Punta Baja its abundance in the middens appears tied in with the cool temperatures and strong cool-water element so evident in the littoral biota of much of this coast. It is hoped that investigations currently continuing at several atomic laboratories, with respect to the isotopic O and C content of these valves and other shells taken at different levels, will yield sound clues to the post-Tertiary history of thermal and faunal changes in the region.

(Luncheon)

Dr. N. T. Mattox, Hancock Foundation, U.S.C. "A preliminary report on the quantitative survey of molluscan communities in the San Pedro Basin area."

(Abstract)

A survey of the benthic communities in the San Pedro Basin area is in progress. The area being surveyed is bounded by Santa Catalina Island on the west, Redondo on the north, and along the coast south to South Laguna. This area lies between the parallels 33°50′ to 33°16′ and meridians 118°36′ to 118°46′. This covers an area of 520 square miles. Stations are being established at 2 mile intervals, a total of 267 stations. A bottom sampler, "the orange-peel-bucket," is used to pick up samples. The sampler covers an area of 2.6 square feet, hence a known area of the benthic community is obtained. The sample is brought aboard the Velero IV, the research ship of the Foundation, and is washed through a series of screens. All animals are conserved. Records of depth, texture and nature of the bottom, and indication of the exact location is made at the time each sample is taken.

The animals collected in these samples are being studied by different workers of the different animal groups. Only a few of the collections of mollusks have been studied to date, not enough to formulate any distributional patterns. Only living animals are considered in this study. A few representative samples are here outlined:

Station No. 224, 45 Fathoms, 1 cu. foot, mud; 13 species of living mollusca; 1 amphineuran, 7 pelecypods, 5 gastropods; and 1 species of brachiopod; with a total of 116 individuals.

Station No. 7, 61 Fathoms, 1.5 cu. feet, sandy mud; 12 species of mollusca: 2 scaphopods, 6 pelecypods, 4 gastropods; representing 187 individuals.

Station No. 12, 229 Fathoms, 1.5 cu. feet, sandy mud; 14 species of mollusca: 1 amphineuran, 9 pelecypods, 2 gastropods, 2 scaphopods; a total of 503 individuals.

Station No. 69, 400 Fathoms, 2 cu. feet, mud; 7 species of mollusca: 3 gastropods, 1 pelecypod, 3 different solenogasters; a total of 40 individuals.

These few examples exemplify the variety and wealth of material. For final reports all species are being determined where possible. It is hoped that a better indication of the true picture of the benthic molluscan communities in off-shore waters may be presented, with the conclusion of these studies.

Mr. E. P. Chase, Lomita, California. "*Nassa californica.* A discussion of its taxonomic position."

(Abstract)

A review showing the various uses of this name by later authors. Originally applied to a Miocene shell it has also been used for a Pleistocene and a recent shell, both of which have since been given other names, the Pleistocene shell now being *N. delosi* Woodring and the recent one *N. rhinetes* Berry.

Mr. Chester Wong, School of Tropical and Preventative Medicine, Loma Linda, California. "The response of *Oncomelania* to various types of light and lighting conditions."

Mr. John Q. Burch, Los Angeles, California. "A new form, *Aulica imperialis* Lamarck." (This paper was published in "Minutes of the Conchological Club of Southern California," number 140, July, 1954.)

6:00 Dinner

Mr. Robert Robertson, Stanford. "Systematics of the Conidae."

(Abstract)

The Conidae, comprising about 800 species, can, despite a certain amount of intergrading be segregated into about 30 subgenera, all falling into one genus, *Conus.* Characters of value for distinguishing the groups are: the sculpture of the spire and periphery, the depth of the anal notch, the general form, and occasionally the coloration.

SUGGESTED SUBGENERIC ALLOCATIONS OF RECENT WEST AMERICAN CONIDAE

Species	*Subgenus*
Conus archon Broderip	LITHOCONUS
C. arcuatus Broderip and Sowerby	LEPTOCONUS
C. bartschi Hanna and Strong	CONUS, s.s
C. bramkampi Hanna and Strong	DENDROCONUS
C. brunneus Wood	CONUS, s.s.
C. californicus Hinds	CHELYCONUS
C. chaldaeus Röding	RHIZOCONUS
C. dalli Stearns	CYLINDRUS
C. diadema Sowerby	CONUS, s.s.
C. dispar Sowerby	? LITHOCONUS
C. durhami Hanna and Strong	CYLINDRUS
C. ebraeus Linnaeus	Type of VIRROCONUS (= RHIZOCONUS)
C. fergusoni Sowerby	LITHOCONUS
C. gladiator Broderip	CONUS, s.s.
C. gradatus Mawe	Intermediate between LITHOCONUS and LEPTOCONUS
C. lucidus Wood	CYLINDRUS
C. mahogani Reeve	? CHELYCONUS*
C. nux Broderip	RHIZOCONUS
C. patricius Hinds	DENDROCONUS
C. perplexus Sowerby	? CHELYCONUS*
C. princeps Linnaeus	CONUS, s.s
C. purpurascens Broderip	CHELYCONUS
C. recurvus Broderip	LEPTOCONUS (A nice example)
C. regularis Sowerby	LITHOCONUS
C. scalaris Valenciennes	LITHOCONUS
C. tessulatus Born	LITHOCONUS
C. tiaratus Broderip	RHIZOCONUS
C. tornatus Broderip	?? ASPRELLA ?? CHELYCONUS
C. virgatus Reeve	LITHOCONUS
C. vittatus Bruguiere	? RHIZOCONUS or ?? CHELYCONUS
C. ximenes Gray	? CHELYCONUS *

* *C. mahogani, C. perplexus,* and *C. ximenes* seem to form a natural group for which there is no name.

Dr. S. Stillman Berry, Redlands, California. "Importance of the large pyramidellid elements in the West American fauna."

(Abstract)

The *Pyramidellidae* constitute a very large element of the marine molluscan fauna of western North America. They are numerous from the Pliocene onward and the presently known total of 550 or more species is far the highest recorded for any area. *Turbonilla* and *Odostomia (sensu lato)* are the most abundant genera, with approximately 275+ and 250+ species respectively. Recent British and Scandinavian work on the morphology and ecology of North Atlantic species indicates that the *Pyramidellidae* are obligatory ectoparasites possessing strong opisthobranch affinities. The close host-parasite specificity there indicated with other mollusks, annelids, coelenterates, etc. affords the first reasonable explanation of the existence of so many often closely allied sympatric species, and opens a wide and nearly untilled field to the student of parasitism, of speciation, of zoogeography, of phylogeny, or of faunal succession, while the possible usefulness of the group in Tertiary and Quaternary stratigraphy and paleoecology has scarcely been touched. The field has become too vast and its paths too intricate for effective exploration by the general student of molluscan systematics. The need is great, although not greater than the opportunity, for an adequately trained specialist or specialists to deal intensively with the group.

Marine Life Motion Pictures, "Seashore Oddities."

Saturday, June 19th

8:00 Breakfast, University Cafeteria.

9:30 Announcements. Business Session. Presentation of papers.

Mr. E. P. Baker, Downey, California. "Interesting others in marine life."

Dr. S. Stillman Berry, Redlands, California. "On the genus *Ocythoe*, relative of the argonaut, in California waters. "*Vitrinella williamsoni* Dall."

(Group picture; luncheon.)

Dr. Tron Soot-Ryen, Hancock Foundation, U.S.C. "Characteristics used in the classification of West American Mytilids."

(Abstract)

The family *Mytilidae* is, geologically speaking, very old and is interesting because recent species have retained many primitive characters. As a family it is relatively well circumscribed, but the species, which usually are very variable in form, color, and even sculpture, have been much confused by students. Nearly all early descriptions contain only external characters and the species have been figured from the outside, shell only. The systematic arrangements have been confusing as there has been a tendency to place all species in large, vaguely circumscribed genera. Contrary to this procedure one should start with small, well circumscribed units and afterwards unite them in larger genera when a real relationship can be proved.

The pelecypod animal consists of the valves and the soft parts. The valves fortunately preserve many characters from the soft parts, which secrete them, but these characters are always found on the inside of the valves. If these characters are few or obscure it is necessary to study the soft parts. The most important characters in the mytilids are the development and the relative placement of the retractor muscles of the foot and byssus, the development of the anal opening and the branchial part of the mantle, the consistency of the resilial ridge, teeth on the anterior margin and crenulations above or behind the ligament. These characters have been used in a review of the species of the family *Mytilidae* from the west coast of America which will shortly be printed in the Allan Hancock Foundation, Pacific Expedition Series.

SYMPOSIUM ON MOLLUSCAN ECOLOGY

Mr. Ralph O. Fox, Berkeley, California. "Sandy Beaches."
Mr. E. P. Chace, Lomita, California. "Rocky Beaches."
Dr. S. Stillman Berry, Redlands, California. "Tidal Flats."
Mr. William K. Emerson, Museum of Paleontology, U. of C., Berkeley. "Aspects of Discontinuous Distribution."

(Abstract)

West coast students of conchology are fortunate in having considerable information on the distribution of the Eastern Pacific shallow water mollusks. Numerous faunal lists have been compiled for local areas. These data, together with the records of material contained in museums and private collections, provide the basis of the faunal check lists of Dall (1921), Keen (1937) and Burch *et al* (1945-1946). The recorded ranges are constantly being revised as new information becomes available.

The common procedure for the conchologist when attempting to determine the geographic range of extant species is to record the end points of range in terms of latitude or longitude. As a result, a number of inherent problems are encountered. The following factors can falsely extend ranges and should be considered when evaluating the available data: 1. sterile or nonreproductive distribution, 2. unnatural transport, 3. misidentifications, 4. confusion with fossil material, and 5. unreliable locality records.

The serious amateur can increase our knowledge of the distribution of the mollusks by making careful collections in local areas and recording his findings in appropriate journals.

Dr. A. Myra Keen, Dept. of Geol., Stanford. "The brackish-water *Cardiacea.*"

(Abstract)

The Cardiacea are, in general, shallow-water marine bivalves, although one species, *Cerastoderma edule,* is able also to live in such estuaries as the Thames river mouth, where the salinity is low. During the latter part of the Tertiary Period (Miocene to Pliocene), earth movements isolated from the ancestral Mediterranean the areas that are now the Black, Caspian, and Aral Sas, with a profound effect on the marine faunas therein. Most of the marine stocks could not survive, but the ancestors of *Cerastoderma edule* and of perhaps other cardiid species of today were able to adapt to the changing environmental conditions. The result was an extravagant development of new and bizarre forms which are now found as fossils throughout the south Eurasian region. Some 35 generic names have been proposed by authors to group the vast number of named species. Probably not all the names are really valid because little over-all revisional work has been done, but at least six generic names do seem useful. Surviving in the Aralo-Caspian area today are nine species assigned to three genera, *Adacna,*

Didacna, and Monodacna. They are characterized by thin shells, loss of hinge teeth, and even, in some, the development of long siphons and a pallial sinus.

Dr. Wendell O. Gregg, Los Angeles, California. "Finding snails in the desert."

7:30 Annual Banquet, at Carl's, Figueroa and Flower.

* * * *

MEMBERS IN ATTENDANCE AT AMUPD MEETING, JUNE 18, 19, 1954:

Mr. and Mrs. John Q. Burch, Los Angeles, Calif.; Mr. and Mrs. Harry S. Turver, Los Angeles, Calif.; Florence and Maye Thurlow, Venise, Calif.; Lela M. and Elaine Griffith, Egmont, B. C., Canada; Lucille Zellers, El Cerrito, Calif.; William K. Emerson, University of California; Mr. and Mrs. R. G. Beck, Escondido, Calif.; Mr. Andrew Sorensen, Pacific Grove, Calif.; Dr. and Mrs. Phil Spicer, Centralia, Washington; Mr. and Mrs. John P. Strohbeen, Santa Cruz, Calif.; Carl I. Thomas, Orange, Calif.; Robert Talmadge, Willow Creek, Calif.; Mr. and Mrs. E. P. Chace, Lomita, Calif.; Ralph O. Fox, Berkeley, Calif.; Ruth Coats, Carlsbad, Calif.; Ray Summers, Pleasanton, Calif.; Mr. and Mrs. George P. Kanakoff, Los Angeles Museum; Helen Rost, Allan Hancock Foundation, U.S.C.; Dr. Tron Soot-Ryen, Allan Hancock Foundation, U.S.C.; Dr. A. Myra Keen, Stanford University; Dr. S. Stillman Berry, Redlands, Calif.; Dr. and Mrs. N. T. Mattox, U.S.C.; Paul H. Steele, Sacramento, Calif.; Lindsay R. Winkler, Los Angeles, Calif.; Kenneth A. Althaus, Los Angeles, Calif.; Bessie Falconer, Los Angeles, Calif., Mr. and Mrs. Chester Wong, Loma Linda, Calif.

Mrs. Clarice Seldomridge, Port Angeles, Wash.; Mr. and Mrs. Ralph Bormann, Long Beach, Calif.; Mr. and Mrs. Robert Alexander, San Diego, Calif.; Mr. and Mrs. Crawford Cate, Los Angeles, Calif.; Dr. A. Howard, Rivera, Calif.; Tita Schafer, San Gabriel, Calif.; Patrick Milbum, Corona Del Mar, Calif.; Mrs. G. E. MacGinitie, Corona Del Mar, Calif.; Henry Chi, Los Angeles, Calif.; Mr. and Mrs. Russell Woglum, Pasadena, Calif.; Gilbert Grau, Los Angeles, Calif.; Mr. and Mrs. Howard Fletcher, Redlands, Calif.; Mr. and Mrs. Mead French, San Pedro, Calif.; Mr. and Mrs. Edward Baker, Downey, Calif.; Mickey McGaughy, Highland Park, Calif.; Mr. and Mrs. D. L. Burford, Culver City, Calif.; Dr. Wendell O. Gregg, Los Angeles, Calif.; S. J. Inglis, Whittier, Calif.; Mr. and Mrs. Helmut Meier, San Marcos, Calif.; Mr. and Mrs. Roy E. Hall, Oceanside, Calif.; Mr. and Mrs. Munroe Walton, Glendale, Calif.; Mr. and Mrs. E. W. Ulrich, Long Beach, Calif.; Mr. J. W. Rhodes, South Gate, Calif.

RUTH E. COATS,
Secretary-Treasurer, A.M.U.P.D.

MEMBER CLUBS

THE NEW YORK SHELL CLUB, Edward F. Cowles, Jr., Recording Secretary: With an active membership of fifty, the New York Shell Club continues its steady, if not rapid, growth into its sixth year. The larger room generously provided by the American Museum of Natural History could seat many more; but since there must be hundreds of potential members in this metropolitan area, we have been a little timid (perhaps too much so) about advertising our existence lest we be deluged.

That we have not stagnated, however, is evidenced by the scholarly and entertaining papers (many of them both) presented during the year. For instance: "Adventures in Malacological Gastronomy," by Dr. Walter H. Jacobs; "The *Liguus* of Florida," paper and exhibit by Dr. and Mrs. Julius Wisoff; "References to Shellfish in Ancient Greek Literature and Art," by Miss Catherine Ahders; "Differentiating the Helicostylidae," by Mr. M. K. Jacobson, with slides by Mr. George Wilmott; "Shellfish Contamination Controls in the New York City Area," by Mr. Michael Krassner. Also, descriptions of collecting experiences: land and freshwater snails in Florida and other southern states, with exhibits, by Mr. Frank Hausman; land snails in Cuba, slides by Mr. Jacobson; slides taken in the Lesser Antilles by Mr. Cowles; and Dr. Loery's fine color travelog of Guam including shots of live *Harpa, Conus,* and other species.

Stimulus from outside was provided by Dr. Ruth D. Turner, of Harvard's Museum of Comparative Zoology, who graciously came down from Cambridge to present an illustrated talk on the historic and present economic importance of the *Teredinidae.* At another meeting, Mr. Royal Toner, head of the Oyster Institute of North America and an oyster farmer for over 40 years, told us about the methods and problems of the industry.

In May, the annual field trip covered several localities on Staten Island, and specimens of land, freshwater, and marine mollusks were collected by those members who went on the outing. Staten Island also was the scene of Mr. Wilmott's discovery of *Lymnaea columella chalybes* Gould, new to the New York city area. He believes they came with some Florida water hyacinths that he bought for an artificial pond at his home in Princes Bay.

The election of our former President as President of the A.M.U. and the choice of New York for the Union's annual meeting in 1955 have made us proud, and at the same time humbly determined to leave nothing undone that is in our power to make the meeting a grand success.

Our officers, all unanimously re-elected at the February meeting, are: President, Dr. Walter H. Jacobs; Vice-President and Treasurer, Mr. Anthony D'Attilio; Recording Secretary, Mr. Edward F. Cowles, Jr.; Corresponding Secretary, Mrs. Dorothy D. Freas (who moved away during the summer and whose position was filled by the appointment of Mr. Morris K. Jacobson).

CONNECTICUT SHELL CLUB, Gertrude W. Thompson, Secretary: The club has staged three shell shows during the past year, displaying shells in a New Haven bank, the New Haven library and the Waterbury library; all attracted attention and brought favorable comment.

Sometimes visiting speakers entertain at the monthly meetings; on other occasions the programs are in charge of members. The president, Mr. Percy Morris, frequently displays shells from the collection of the Peabody Museum, and brings topics of interest to each meeting. Swap Nights are popular, as are pictures of shells and other marine subjects.

PACIFIC SHELL CLUB, Crawford N. Cate, President: We meet on the third Sunday of each month, October through May, in the Los Angeles County Museum. Now in its eleventh year, the Pacific Shell Club is open to all who are interested in shell collecting, adults and children alike. At each meeting, fine shells are given as door prizes, and in addition, many duplicates are always generously donated for general distribution among the members.

The officers for the year 1953-1954 were as follows: President, Mr. Crawford N. Cate; Treasurer, Mr. Lloyd Berry; Secretary, Miss Elois Crum; Museum Sponsor, Dr. Howard R. Hill.

During the past year our programs were as follows:

"The Watering-pot shells, the Carrier shells, and an exhibit of Japanese shells" by Dr. Howard Hill, founder of the club in 1944.

"Pectens of the World," by Gil Grau.

"Shells of the Northwest,"by Emery Chace.

"A Skin Diver Collects Shells," by John Fitch.

"Where to Collect in Southern California," by Ned Baker.

"Abalones of the World," by Damon Burford.

"Collecting in Concepcion Bay, Baja, California," by Crawford Cate.

Annual Picnic.

At the October meeting, the following officers were elected for the year 1954-1955: President, Mr. Crawford N. Cate; Vice-President, Mr. Milton Zim; Treasurer, Mr. Isaac Cowgill; Secretary, Miss Florence Thurlow; Field Chairman, Mr. Damon Burford; Museum Sponsor, Dr. Howard R. Hill.

We started the new year with 124 active members, the largest membership in the history of the club. The program for the October meeting was a talk on the Land Shells of Florida and Cuba, by Dr. Hill, and included a fine display of illustrative material.

The November topic was *Some Phyllonotus of the Gulf of California,* by Mr. and Mrs. Cate, illustrated by color slides and specimens.

Plans for the coming year include a basic foundation program of shell terminology, taxonomy, and ecology, illustrated with color slides and chalk drawings by Mr. Cate, Miss Thurlow, and other members. We plan to study several major shell families, taking up the chief characteristics and variations of a new family each month. We also plan to include at least one field trip to some nearby collecting ground.

The Pacific Shell Club cordially extends to all AMU members and their families and friends an invitation to visit our meetings whenever possible.

BOSTON MALACOLOGICAL CLUB, Mrs. Margaret F. Carlson, Secretary: The following is the program of 1953-54 activities—Report of summer activities of members; Film of underwater life on the Australian Barrier Reef, "Coral Wonderland"; "Land Shells of Hawaii," Mr. Yoshio Kondo; Display of rare books on conchology by Mr. Richard I. Johnson; "Problems in Raising Snails," Mr. Edward Michelson; "Collecting in Australia," Mr. Donald McMichael; "Chattahoochee Survey," Dr. William J. Clench; "Salt Marsh Snails of the Genus *Melampus,*" Prof. Paul Holle. The annual club outing was held at Wingaersheek Beach, Gloucester, Mass.

1953-54 officers: President, Mr. Herbert D. Athearn; Vice-President, Mr. Arthur H. Clarke, Jr.; Conchological Recorder, Dr. Joseph C. Bequaert; Secretary-Treasurer, Mrs. Margaret F. Carlson; Executive Committee, Mr. Edward Michaelson, Dr. William J. Clench.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, D. L. Burford, Secretary: The Conchological Club of Southern California has a paid membership of sixty, showing a slight increase over last year.

Meetings are held 7:30 P.M. the first Tuesday of each month, ground floor, S.E. entrance of the Los Angeles County Museum.

There is a publication, "Minutes of the Conchological Club of Southern California," edited by Mr. John Q. Burch. About ten issues a year are published.

The following officers were elected for 1954:

President	Miss Ruth E. Coats
Vice-President	Mr. John Fitch
Secretary	Mr. D. L. Burford
Treasurer	Miss Bessie Faulkner

Besides the scheduled programs listed below, there have been reports on collecting and nomenclature.

"Fine Books and Their Care" by Mr. George Zenick.

"Nassariidae of West Mexico" by Mr. Harry Turver.

"Shells of West Mexico" by Miss Ruth E. Coats.

"The Use of Free-Diving Apparatus" by Mr. Conrad Limbaugh of The Scripps Institute of Oceanography, La Jolla, California.

"West American Mytilidae" by Dr. Tron Soot-Ryen of the Museum at Tromso, Norway.

"Worldwide Abalone" by Mr. D. L. Burford.

"The Distribution of Marine Life With Relation to Temperature" by Dr. John Garth of the Hancock Foundation, University of Southern California, Los Angeles, California.

"The Argonauts and Their Relatives" by Dr. S. Stillman Berry.

"Venomous and Poisonous Mollusca" by Dr. Bruce Halstead of the School of Tropical and Preventive Medicine, Loma Linda, California.

"Fossil Collecting in Southern California" by Mr. George Kanakoff of the Los Angeles County Museum;

"Illustrated Field Trips" by members interested in sharing their trips with the group.

"Presentation of Student Papers" by members of Miss Coats beginners' group.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: The public is invited to the monthly meetings, held at 2:30 P.M. on the second Sunday in the Main Public Library, Long Beach.

Two projects were undertaken during the past year; a second edition of the club book, "Shells and Shell Collecting" was issued, and a Print-O-Matic machine was purchased, to be used in sending out monthly notices.

Two of the regular meetings become special occasions; a covered-dish supper at the home of Mr. and Mrs. E. Baker Downey was followed by a showing of colored slides taken by the host and hostess on their summer vacation. And another covered-dish supper enlivened the Christmas party at the home of Capt. and Mrs. Fred Barnett, followed by a gift exchange of shells.

Officers for 1954: President, Mrs. Bessie Arnold; Vice-President, Mrs. Jean Wilkins; Secretary-Treasurer, Ralph Bormann; Librarian, Mrs. Irene Baker; Historian, Mrs. Ralph Bormann.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Catherine Bradley, Secretary: The Buffalo club was 57 years old in 1954 and going strong. Meetings are well attended and interest remains high though a pressing need is felt for the presence in the city of a qualified authority to answer the questions which inevitably arise. Unlike the New England and California clubs which are in close proximity to universities with large collections and professional malacologists, Buffalo is several hundred miles distant from the nearest source of supply.

However, a new practice instigated within the past year has been well received: with the approval of the Director of the Buffalo Museum of Science, the museum's study collection of shells is being reviewed by the club. Sometimes in connection with papers prepared and delivered by members and at other times independently, all of the shells of a family are put on display at each meeting during the winter months when meetings are held at the museum. Since the shells to be shown are announced in advance (and usually determined by popular vote) members are able to bring their own problem shells for comparison and identification.

The Observation Poll remains a popular feature; everyone present is called upon to contribute something in the malacological vein which he or she may have seen, heard or read since the last meeting. Some lively discussion always ensues and there are few "passes."

Four members attended the annual meeting of the American Malacological Union at Durham, New Hampshire, and the September meeting was given over to receiving reports of that occasion. Another time minute and exquisite shells were picked from sifted material from a South Sea coral reef and at still another meeting the last of the Robertson collection was distributed to club members.

The following officers were re-elected from the previous year: President, Annie Hoffman (charter member); Vice-President, Gertrude Weber; Secretary, Catherine Bradley; Treasurer, Louise Becker. Meetings at the Buffalo Museum of Science each third Friday evening during the winter months; out-of-town visitors cordially welcome.

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Lucille Zellers, President: Over the past year the club has followed a varied program designed to appeal to all members. Several visits were made and each thoroughly enjoyed; at the University of California Dr. Rudolph Stohler demonstrated his technique of embedding marine life in plastic, and an exhibit of echinoderms was displayed in the museum marine room by Donna Steininger. A visit was made to John Saxby's Pacific Curio Shop on Fisherman's Wharf in San Francisco and another to the home of Mr. Andrew Soresen in Monterey to view his fabulous collection. Several members made a trip to Stanford University to visit Dr. Myra Keen, to view the collection and to see a film on the pearl industry.

On another occasion, since several of the group had purchased Dr. Myra Keen's "Illustrated Key to West Coast Gastropod Genera," Dr. Stohler demonstrated its use with shells which he then presented to his listeners. Allyn G. Smith gave an interesting account of the long-lost California land snail, describing his search and discovery of it and displayed specimens. A Christmas dinner party was attended by 25 members, highlighted by the reading of the 1953 club history by Historian Evelyn Wilson, and by the exchange of gift shells. Dr. Leo Hertlein entertained with slides and a talk about the Galapagos Islands; Dr. Donald Savage spoke of fossils in the Bay area; Mr.

A. F. Gwilliam of the University of California gave a talk on Hydroids and their association with mollusks, showing also slides of the marine biology station at Masaki, Japan. Colored slides and live specimens of nudibranchs were presented by Joan Steinberg of the University.

Verne Peckham of the Junior Museum group displayed his equipment and colored film when he talked of skin diving. John Saxby gave an account of his collecting experiences and displayed prized specimens from his collection. Helen Burton of the club sent reports from her travels in Europe, Africa and South America, while Ralph Fox, William Emerson, Ray Summers and Lucille Zellers attended the convention of the A.M.U. Pac. Div. at the University of Southern California.

Meetings are held the last Tuesday of each month at the Oakland Public Museum. Officers are: Lucille Zellers, President; Dr. Rudolph Stohler, Vice-President; Margaret Oehlman, Corresponding Secretary; Phoebe Balch, Secretary; Evelyn Wilson, Historian.

ST. PETERSBURG SHELL CLUB, M. P. Van Woert, President: The 1953-54 season ended with a paid membership of 103. The following condensed schedule of activities during that period bespeaks a lively interest: "Pliocene Shells of North St. Petersburg," (book review) Axel Olson; Christmas Party, at which time members brought favorite books and slides for informal review; "Story of the Shrimpboat," Dan Steger; "Shells Along the Atlantic Seabord," Joseph Conkling; "Critters of the Sea," Ernest Leighley; 1954 Shell Show, an annual event; "We Saw," Myron and Hilda Van Woert; "The Tiger Cowery," Ernest Klein; "Shells Which We Have Met," Maurice O. Green, Jr.; "Scientific Story of Shells," Maxwell Smith; "Abalones—Their Fascination," Reeves Batten; "Beauty in Shells," Berne and Ludy Cook; "Uncovering Beauty," Frank Myers.

The high point of each season is the Shell Show; no effort is spared in fulfilling our claim that it is the finest show held anywhere. This year judges were Dr. Axel Olson, Dr. Henry Pilsbry and Dr. Maxwell Smith, and in 1955 the co-sponsors, the St. Petersburg Rod and Gun Club, will have completed an extensive remodeling program which will more than double the show space of previous years. Exhibits of other shell clubs, museums, schools or individuals are most welcome. As in other years the Smithsonian Institution will furnish the top award; other awards are blue, red and yellow ribbons furnished by the St. Petersburg club.

ANNOUNCEMENTS

The 1955 annual meeting will be held at the Museum of Natural History in New York City in mid-August. Dates and details will be announced when plans now under consideration have been completed. Co-host: New York Shell Club.

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The new A.M.U. publication, "How to Collect Shells," is nearly ready for the printer. Twice the size of the old "Collecting Symposium" which it replaces, this worthwhile booklet will retail for one dollar. Members will be notified when it is available.

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The St. Petersburg Shell Club invites any interested person or group to prepare an exhibit for the annual Shell Show, an event sponsored by that organization and scheduled for February, 1955. Date and particulars may be obtained from Mrs. Brakefield, 216 28th St., South, St. Petersburg, Florida.

THE AMERICAN MALACOLOGICAL UNION
EXECUTIVE COUNCIL
1954-1955

Officers

President	Morris K. Jacobson
Vice-President	Allyn G. Smith
Second Vice-President	(Chairman, A.M.U.P.) Ralph O. Fox
Treasurer-Secretary	Mrs. Margaret C. Teskey

Councillors-at-Large

R. Tucker Abbott
Yoshio Kondo
Anthony D'Attilio
Dr. Ruth D. Turner

* * *

Past Presidents remaining on the Council without reelection: Dr. Henry A. Pilsbry (1931-1932); Dr. Paul Bartsch (1933); Prof. Junius Henderson (1934)*; Dr. William J. Clench (1935); Calvin Goodrich (1936)*; Dr. Joshua L. Baily, Jr. (1937); Dr. Carlos de la Torre (1938)*; Maxwell Smith (1939); Dr. Horace B. Baker (1940); Dr. Harald A. Rehder (1941); Frank Collins Baker (1942)*; Dr. Louise M. Perry (1943); Dr. Henry van der Schalie (1944-1947); Dr. A. Myra Keen (1948); Dr. Elmer G. Berry (1949); Dr. Fritz Haas (1950); Dr. J. P. E. Morrison (1951); Dr. Jeanne S. Schwengel (1952); Dr. A. Byron Leonard (1953); Dr. Joseph C. Bequaert (1954).

Honorary Presidents: Mrs. Ida S. Oldroyd (1934-1940)*; Dr. Henry A. Pilsbry (1936-); Mrs. Imogene C. Robertson (1939-1953)*.

*Deceased.

PACIFIC DIVISION

Officers

Chairman	Ralph O. Fox
Vice-Chairman	E. P. Baker
Secretary-Treasurer	Miss Ruth E. Coats

ACTIVE MEMBERS

[Membership List Revised December 31, 1954]

Aarnes, Henry, 3880 Newton St., Denver 11, Colo. General interest.

Abbott, R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., 19th and the Parkway, Philadelphia 3, Pa.

Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana. Cuba.

Ahern, Mrs. Thomas, 8082 Cheyenne Ave., Detroit 28, Mich.

Akers, Mrs. Frank G., Box 133, Naples, Florida.

Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.

Alexander, Mrs. Robert, 4759 Valencia Dr., San Diego 15, Calif.

Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.

Allbee, Joel R. M., 1112 Neola St., Los Angeles 42, Cal. Invert. paleontology.

Allen, Dr. J. Frances, Dept. of Zool., Univ. of Maryland, College Park, Md.

Allen, Miss Letha S., 1348 Dartmouth Ave., Baltimore 14, Md. General.

Althaus, Kenneth, 319 E. 110th St., Los Angeles 61. No. Am. Unionidae.

Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.

Anderson, Col. A. S., 504 Carroll St., Dothan, Ala. Worldwide shells.

Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.

Arias, Sergio, Sociedad de Ciencias Naturales La Salle, Apartado 681, Caracas, Venezuela. All mollusks of neotropical regions.

Armstrong, Mrs. Eliot, 681 Lafayette Ave., Buffalo 22, N. Y. Collecting.

Arthur, Will, Cheshire, Conn.

Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y

Athearn, Herbert D., 48 Crane Ave., Taunton, Mass. f.w. mollusks.

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IN MEMORIAM

EDWIN J. CARSWELL
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ANNUAL REPORTS FOR 1955

A. M. U.

Twenty-first Annual Meeting

A. M. U., P. D.

Eight Annual Meeting

Membership List Revised, December 31, 1955

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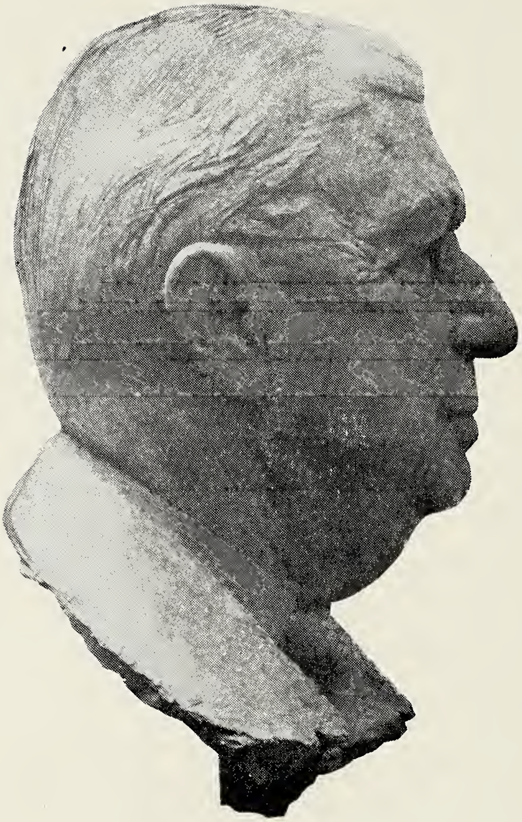


CALVIN GOODRICH

President of the American Malacological Union, 1936

Carlton Angell, sculptor
University of Michigan

CALVIN GOODRICH, 1874-1954

By HENRY VAN DER SCHALIE

The recent death of Calvin Goodrich at the age of 80 ended the career of one of the important contributors to North American Conchology. He had already been affiliated with the Mollusk Division of the Museum of Zoology for many years when, in 1924, he was made an Honorary Associate Curator of Mollusks, while still editor of the *Toledo Blade*. Then in 1926 he retired from the newspaper business and accepted an appointment as full-time Assistant Curator of Mollusks in the Museum of Zoology. In 1930, upon the resignation of Miss Mina Winslow, he was made full Curator, a position he held until 1944 when, at the age of 70, he retired with the title of Curator Emeritus of Mollusks to live in western North Carolina (1944-54).

During the fifteen years (1929-44) of his curatorship, the Mollusk Division made notable progress in two fields of investigation and in the growth of the collections. A series of expeditions were made into the rich limestone regions of the Southern states and concerted efforts were made to elucidate the ecology and distribution of the mollusks of Michigan. He was industrious and methodical and brought to the Division concepts of production he had learned in his many years of activity in the business world. During the time of his curatorship, he published more than eighty scientific papers and the collections grew from approximately 50,000 lots of accessioned mollusks to more than three times that number. Much of this phenomenal growth was due to the gift, in 1936, of the library and collections of the late Bryant Walker. The accessions made in connection with Goodrich's own studies and those of his students and collaborators were considerable. The integration of the huge Walker and Museum collections into a single working unit was in itself a notable accomplishment. As a consequence, during Goodrich's curatorship, the mollusk collection of the Museum of Zoology gained its status as one of the finest of its kind.

The correspondence filed in the Division gives an illuminating account of Goodrich's training and development as an outstanding conchologist. During his many years in editorial work he ardently pursued the study of mollusks, but his scientific development in the field appears to have been due largely to the influence of two key workers, Bryant Walker and A. E. Ortmann. He began his long-continued correspondence and association with Bryant Walker of Detroit and Arnold Edward Ortmann of the Carnegie Museum in Pittsburgh while he resided in Toledo. He used to relate how, in the 1910 to 1920 period, he got into the surrounding country by street cars out of Toledo. It was at that time Ortmann (letter to Goodrich dated Dec. 15, 1919) related that he was disappointed in collecting due to flash floods, and then added: "But I hope and trust you will not give up, for this winter, indeed, is over. Spring will come again!" He also asked that Goodrich give his "best regards to Mr. Walker, if you see him again: he is a conchologist to my liking and in systematic Najadology easily the foremost in this country."

Walker, Ortmann, and Goodrich corresponded with considerable regularity and co-operated with one another in their field programs. One of the high points in Goodrich's career came when he went to southwestern Virginia with Ortmann. That trip was the subject of one of Goodrich's first papers, entitled "Spring Collecting in Southwestern Virginia" (*Nautilus,* 27: 81-82; 91-95). Ortmann's enthusiasm and incredible knowledge of geology, physiography, botany, and carcinology impressed Goodrich so much that he often reminisced about that excursion when we were in the field together. Ortmann later wrote to Walker (letter dated Oct. 15, 1913): "Mr. Goodrich is an enthusiastic collector, and he *knows* shells. I have tried to induce him to do geographic work in the Wabash, and according to a letter recently received he started on this work last summer. The Wabash needs study very badly. And that reminds me, is anybody ever going to take up Kentucky River?! Our knowledge of this is practically blank." The influence of Ortmann and Walker on Goodrich is clearly evident, and one can readily trace the pattern of his work through this very fortunate association.

In letters from Ortmann to Goodrich one finds many constructive suggestions which Goodrich followed. For example, Goodrich was encouraged to collect in Lake Erie, as well as in the Wabash-Maumee region. Ortmann wrote (Nov. 4, 1913):

"I want to urge you again to continue your collections in this region and to work out the distribution of various species in detail, chiefly with reference to the crossing over the divide. There is no question that there was *here* the main gate by which Lake Erie received its fauna (see Walker's paper) but just for this reason we shall study the particulars. Is there any actual connection of waters at present?"

These suggestions were followed and in a paper published in the *Nautilus* a year later (1914) Goodrich discussed "Union of the Wabash and Maumee Drainage Systems."

In the meantime Goodrich became interested in the fresh-water operculates belonging to the Pleurocerid group. Both Walker and Ortmann were helpful and enthusiastic supporters. These snails occur in tremendous numbers in most of the rivers of the eastern United States. As with fresh-water mussels, many species were named at a time when there was little or no appreciation of the clinal tendencies so evident in those groups. The many specimens collected by Ortmann, H. H. Smith, Hinkley, and others soon found their way to Goodrich. He himself made numerous expeditions mainly to study these animals in their environment. In addition to learning at first hand the ecological and distributional relationships of groups and species, Goodrich also attempted to interpret their distribution in terms of drainage history. In a letter, dated Dec. 3, 1920, Ortmann wrote:

"Your sketch of the Geological History of the relations between the Tennessee and the Alabama drainages was extremely interesting to me and I saw at once that you properly understood the questions involved, although your views possibly require modification in some points."

For at least thirty years Goodrich concentrated in his mollusk studies on the family Pleuroceridae. The papers he published on those groups number at least two score; several of them approach monographic proportions. In 1937, at the Ann Arbor meeting of the American Malacological Union, he was made a member of the standing committee responsible for publishing check lists on mollusks north of Mexico. He accepted this assignment with resolve and determination so that before his retirement a half dozen years later, several such lists appeared, as follows, Pleuroceridae of: St. Lawrence Basin (*Occ. Papers* 404); Mississippi Basin (*Occ. Papers* 406); Ohio River (*Occ. Papers* 417); small streams of Alabama River system (*Occ. Papers* 427); Atlantic Coastal Plain (*Occ. Papers* 456); Pacific coastal drainage (*Occ. Papers* 469); and the Great Basin (*Occ. Papers* 488).

The clinal variation of the Pleuroceridae has already been suggested as one of his interests. There is no question but that forms of the upper parts of rivers grade into those of the lower. These clines involve several characters such as size, sculpture, and banding. Although Goodrich indicated some of the broader trends, just as Adams did with *Io*, many of the malacological relations are still in need of study.

Although a number of Goodrich's writings concern the Pleuroceridae, he wrote a variety of mollusk papers which are of broad and basic interest. Among them are a handbook, *The Mollusca of Michigan* (1932), "A Revision of the Mollusca of Indiana" (1944) and numerous papers dealing with faunal observations in the many places he visited. In all, his scientific writings include some eighty-six titles. His interests were broad, and he spent considerable time studying history. In that field he has one book to his credit, *The First Michigan Frontier* (1940). He had a genuine gift for writing, and he also published a dozen or more articles in history journals and in the *Michigan Alumnus*. In the latter, his contributions bear such titles as "Piping Time of War" (1937), "Sandburr Farm" (1938), "Rural Fences in Michigan" (1943), "The Lie of the Land" (1945), and "By Waterways West" (1947).

During his years of residence in Ann Arbor he took an active interest in the affairs of the Michigan Academy and was chairman of the Zoology Section in 1938. In 1931 he served as a founder of the American Malacological Union, attending most of the meetings from that time till his retirement; in 1934 he was vice-president, presided at the meetings in Buffalo for W. J. Clench (who was unable to be present), and in 1936 completed his year of service as president by presiding at the meetings in St. Petersburg, Florida. He was a staunch and faithful member of the Bryant Walker Natural History Club and later took an active part when stalwarts from that group organized the Detroit Academy of Natural Science. He was also a member of the Limnological Society, the American Society of Ichthyologists and Herpetologists, and the Deutschen Malacologischen Gesellschaft. He regularly gave financial aid to struggling scientific journals and preferred to have his gifts remain anonymous.

When he retired in 1944, he moved to western North Carolina. Unfortunately, that region is difficult for one interested in mollusks. In a letter from Hendersonville (dated Nov. 12, 1944) he wrote:

"The paucity of shells continues. I have seen alive only a slug which lives at the edge of concrete sidewalks, and, I feel certain, is an importation. The rocks are highly metamorphosed primitives, and while the books speak vaguely of beds of limestone here and there, I haven't seen one. When gasoline becomes more available, if ever, I hope to drive over to the Smokies to our west—the western faces of which are lime."

Later, he managed to collect some specimens. As recently as 1950 he published observations (*Nautilus*, 1950) on one of the local fresh-water snails, *Goniobasis proxima* (Say). On May 17, 1945, he sent a small package with a few species to the Museum and indicated the shipment would "give a notion as to how sparse the molluscan population is here." He then gave a more definite explanation of the circumstances, as follows:

"The mountains have been lumbered over. Then, here and there, clearings have been made, farmed until the soil was exhausted and then let to grow up to briars and weeds. On top of this destruction have been ravaging fires. It would seem that the survivors, such as they were, managed to hold only to a zone upon which clouds condensed. It may be that some day I will find a respectable population of shells, but that will be mere happenchance."

All his life Goodrich was a careful and systematic collector. He has contributed considerably to our knowledge of regions which are now ruined by the many forces responsible for the destruction of natural resources. A letter to Goodrich from Ortmann (Jan. 21, 1918) contains the following statement: "*Goniobasis* is disappearing fast in consequence of pollution of streams. Last summer I collected some good material in the upper Beaver drainage, but for the rest you hardly can find *Goniobasis* any more. Thus our old material, collected 10 and 12 years ago, becomes very important."

Many areas in the South, as well as in Ohio, Indiana, and Michigan, where Goodrich formerly collected, experienced similar ravaging influences, and his well labeled materials will prove of inestimable value in the future.

During his retirement, and when shells became scarce, Goodrich turned to other interests, mainly raising local ferns and studying the essentials of landscape painting. His garden at one time had over ninety ferns, including most of those listed for the county, as well as two not previously reported there. Those of his friends who received samples of his paintings realized that he had had considerable latent talent as an artist.

His shrewd judgment struck me when I recently perused some of the letters he wrote during his retirement. In a letter dated October 23, 1950, he predicted the time of his death, as well as indicated that he had a sense of humor, when he wrote:

"I thank you for the answers to my questions. It is odd that I should have forgotten the name. . . . A freakish memory is another one of the degenerate characteristics of old age. I see by the insurance statistics that I am allowed four more years, and I may live them unless one of these wild hillbillies, loaded with valley tan, bangs me up on the road."

He died in the hospital at Asheville just four years later, Nov. 7, 1954.

(This obituary appeared in *Nautilus,* Vol. 68 (4) and in the Report of the Director, Museum of Zoology, University of Michigan, 1953-1954.)

TWENTY-FIRST ANNUAL MEETING
# of the
AMERICAN MALACOLOGICAL UNION
July 26th-29th, 1955

If anyone doubts that there exists an isolated sylvan retreat within the confines of the world's greatest metropolis, that person did not attend the twenty-first annual meeting of the American Malacological Union. Wagner College occupies a Staten Island hilltop which affords a matchless view of busy New York Harbor, yet is sufficiently remote from any urban center to be completely free of traffic noise and factory haze.

A new students' dormitory, Guild Hall, was placed at the disposal of the visiting malacologists, as was the students' dining room and the Chapel. The latter was used as a lecture hall for all but two of the sessions. Hospitality was the keynote. The facilities so graciously offered provided enough sleeping accommodations so that crowding or doubling-up was unnecessary, an appreciated feature since it was July and it was hot.

As always, several delegates arrived during the afternoon and evening preceding the scheduled meeting date. President Morris K. Jacobson was on hand to greet them on behalf of himself, Wagner College and the New York Shell Club. The latter was further represented by Mr. and Mrs. Anthony D'Attilio who for four days did yoeman service at the registration desk.

Registration on Tuesday, July 26th, was one long reunion as friends met again, in most cases for the first time since the previous annual meeting at Durham, New Hampshire. Shelling experiences were swapped, and soon shells were spread on the wide coping of the great stone terrace as their owners sought identification, comparison or admiration. Some had brought duplicates for distribution and there was no lack of eager takers. Of such generosity one may say with Shakespeare: "It blesseth him that gives and him that takes."

Noon brought the lunch bell and the short walk to the dining hall led beneath a blooming false-mimosa tree (*Albizzia julubrissin*) which was to bring delighted comment three times each day for so long as the meeting lasted.

The opening session was called to order at 1:30 by President Jacobson who again welcomed the delegates, then introduced Dr. David M. Delo, President of Wagner College. He said: "You are most welcome. Anything we can do to grease the skids, so to speak, you need only to request. Except the weather; we can't fix that!" He then volunteered a short history of the college, a welcome subject since keen interest in the friendly little place had been aroused. A co-educational College of Liberal Arts sponsored by the United Lutheran Church, Wagner has an enrollment of 900; the majority of the male graduates go on into Seminary and Church work, while the schools of chemistry, nursing, business administration and education turn out a proportionate number of graduates each year. The seventy-two acre campus was once the estate of Thomas Cunard, son of the founder of the great steamship line, and the building housing the dining hall had been his home. "Finally," said Dr. Delo, "although Wagner is expanding rapidly, it will always be the friendly place we trust you have already found it to be. So come another year!"

Mr. Jacobson in response assured him that neither he nor Wagner would be held responsible for the weather, and voiced the gratitude of the organization for the facilities which had been so graciously provided.

Two delegates from across the seas were introduced: Dr. Asela B. Franco of Cebu, Philippine Islands, and Mrs. Germaine Warmke of Puerto Rico. Mr. Henry Dodge of Scarsdale, New York, known for his work on Linnanean types, was also introduced.

Mrs. Lilias Cockerill of Sanibel Island, Florida was presented and after showing a series of slides taken at the 1949 meeting at Miami, she spoke briefly on the subject of labels, a vexing problem in the South where heat and insects take rapid toll of both ink and paper. She reported marked success in experimenting with acetate ink on transparent Vinyl, especially effective when the shells are on a white background. "Will not these products discolor or become brittle?" she was asked. "They have stood up in my cabinet for ten years now and are as good as new." Dr. William J. Clench observed that silverfish will not eat paper upon which red ink has been used.

TROPISMS IN TAXIS OF LITTORINA LITTOREA

Michael B. Krassner
New York Shell Club

(Abstract)

Littorina littorea Linne is the common rock dweller of the Atlantic coasts of Europe and North America. It is representative of many of the two hundred-odd species of the world-wide genus, _Littorina,_ commonly called periwinkles.

The species is well known where it abounds, and its anatomy was figured by Woodward as early as 1855. There is an excellent account of the snails mating activities, growth, and variation in Dr. Tucker Abbott's "American Sea Shells."

The paleontological record of _Littorina littorea_ was studied by Owen, and then by Woodward in the middle of the Nineteenth Century. Tryon, in his 1883 work, traced the species from the Miocene.

The tropic or stimulus-initiated activities of the snail were studied by a host of workers. Among the best known are: Mitsukuri, Bohn, Haseman, and Morse. These men dealt mostly with phototropisms. In 1916 Sakyo Kanda added experiments with the snail's geotropisms to the growing fund of _Littorina littorea_ knowledge.

In observing snails on the rock jetties of Brighton Beach, New York, I noticed that given the same tide-height, the snails spent more time out of water in the winter than the summer. In a series of experiments _(Nautilus —1955)_ the following conclusions were reached and their implications drawn:

1. **_Littorina littorea Linne_ is unaffected by normal seasonal air temperature changes.**

2. *Littorina littorea Linne* is attracted by sea water of an average temperature of 50° F. It is repelled by sea water of about 30° F. and less, and also by sea water of higher than 70° F.
3. *Littorina littorea Linne* is repelled by strong light (negatively photo tropic) despite the temperature of the water it crawls into, or the temperature of the air it leaves.

Mr. Krassner's paper was illustrated by photo slides, pen and ink drawings and charts. Dr. Clench: "Dr. Bequaert decided that temperature is a leading factor in the North-South distribution of this species." Dr. Joseph C. Bequaert: "But my conclusions were based on observation rather than experiment; Mr. Krassner has controlled experiments to back up his observations." Jacobson: "As the water warms does *Littorina littorea* retire North then advance South with the winter?" Krassner: "There have been no published accounts but in Greenland where most recorded observations were made they tend to go up the rocks rather than down the coast." Jacobson: "At any rate we see the value of experiment to back up observation."

RESPONSE TO SMALL BEGINNINGS

ADLAI B. WHEEL
Syracuse Boys' Club

Mr. Wheel spoke of his work with the boys of Syracuse, New York, and of the need to develop the seeing eye while avoiding the appearance of dishing out information. Shells are especially valuable practice material since their beauty of coloration and form has instant and universal appeal. A short step then to aroused interest in the mollusk which was the architect and his relationship to other members of the animal kingdom. Duplicate material, shells and other marine objects are continually needed for current study and as nuclei for beginners' collections. Mr. Wheel concluded by expressing his gratitude to his listeners who had sent material since his plea of the previous year; Mr. Jacobson added his appeal for shells for such a worthy cause.

THE WORK OF CHARLES B. ADAMS IN THE WEST INDIES AND PANAMA

RUTH D. TURNER
Museum of Comparative Zoology

(Abstract)

It seems appropriate to take a few minutes to discuss the important part which all of us can play in developing the history of Malacology, particularly in this country. We don't need to worry much about the more important workers in the field for their life and work is generally pretty well known and documented, but many of the early collectors and workers who described only a few species are virtually unknown today except as names. The more time that elapses the more difficult it is going to be to get information on such people. Perhaps the main purpose of this paper is to urge you to look into the history in your own area, to find out who worked there and to locate decendents if possible. Most people are delighted to realize that some ancestor of theirs was important and they are usually most cooperative in helping to get information.

The Museum of Comparative Zoölogy received the C. B. Adams Collection in 1942 and since that time a great deal of work has been done on curating the collection and in isolating the type specimens. In 1950 Dr. Clench and I published an account of C. B. Adams' Western Atlantic species, illustrating for the first time all of his types from this area. At present I am working on a review of his species from Panama. It is gratifying to know that the types of most of the species described by Adams from Panama are still in his collection, only the six species of *Coecum* and the three species of *Eulima* plus one or two other are still among the missing. All of the types are now being photographed and these will be, in many cases, the first illustrations of these species. C. B. Adams' failure to figure his new species has caused a great deal of trouble and has probably resulted in the description of many synonyms.

The only other field in which C. B. Adams published extensively was on Jamaican land shells and work is well along on this group, many of the types having been isolated.

As she concluded, Dr. Turner remarked that in 1959, the Museum of Comparative Zoology will be one hundred years old, and that it is planned to issue a memorial volume at that time which will incorporate the biographies of those who have made it great.

Jacobson: "Dr. Turner always adds such a wealth of information to any subject. In digging up data about the Brooklyn Conchological Club I learned a lot about Adams. His life was all too short (he died at 39) and in many instances his descriptions are inadequate; in fact it was proposed to rename all of his species since the types were not easily available. I strongly urge that these biographical studies of our early Naturalists be collected and published and should like to see the letters of Annie Law appear in *Nautilus.*"

At this time, since several scheduled speakers had not made an appearance, Open Forum was announced and members of the audience were urged to ask questions or make observations.

Dr. Franco complained that among a wealth of material there is a dearth of authorative information available in the Philippines. "We send much over here to be identified," said she, "but the distance is great, the wait is long and sometimes we tend to become discouraged." Dr. Joseph P. E. Morrison answered that the staff of the U. S. National Museum is always happy to be of service to Dr. Franco, an old friend.

Dr. Ruth D. Turner remarked that at the Museum of Comparative Zoology wallpaper cleaner is used to clean old dirty labels with great success; penciled notations are not affected, are often made legible when the label is cleaned. Dr. Bequaert: "I like to hear of old labels being cleaned. They should *never* be discarded, nor should any data which accompanies a lot of shells. Old German labels are especially difficult to decipher; luckily we have an expert at M. C. Z." Krassner: "Penciled labels are good in alcohol where ordinary ink is useless." Morrison: "And have you ever tried to use ink with wet hands?"

Margaret Teskey: "On behalf of Mr. Clifford Awald of Buffalo, New York, I'd like to ask whether anybody here knows about testing shells for fluorescent qualities. Quite by accident he discovered that *Umbonium vespertillium* reacted strongly under the long wave Ultra Violet light (at 3600 au.) he uses with his collection of fluorescent minerals. So we went over the shell collection at the Buffalo Museum of Science; some of the species glowed in their entirety, others came out in spots which proved to be glue. *Cypraea mappa* was especially activated, other *Cypraea* species to a lesser degree. Then we tried it on a tray of Caloosahatchee fossils and it was amazing how the patterns came out on the chalky shells; spots came out on the cones, lines on the mitres and the muscle scars on some of the bivalves were startling. Mr. Awald had planned to prepare a paper and an exhibit for this meeting but he wasn't able to attend." Krassner: "A Japanese worker has published a paper on fluorescent shells. Some Hawaiian *Cypraea* fluoresce enough without artificial stimulus to be collected in the dark." Bequaert: "This is an interesting subject; maybe beachworn cones could be so identified." Jacobson: "A dangerous practice; first thing you know they'll be changing a genus around because of the way it fluoresces!"

Dr. D'Alte A. Welch: "To get back to labels: when collecting *Achatinella,* because Hawaiian locality names are so apt to be misleading, I used to plot my location on a map then trace that particular portion of it on my label." Jacobson: "Cubans are apt to invent fanciful names for localities too; that idea would be handy if one could be sure of getting an accurate map in the first place." Krassner: "In which case a photograph would be helpful." Jacobson: "Yes, if you were careful to indicate from which direction you took it."

Mr. Henry Van Felix of the St. Petersburg Shell Club displayed Kodachrome slides of a miniature seascape which he had exhibited at the St. Petersburg shell show, then the arrangement itself.

Dr. Franco distributed favors of shell necklaces and earrings to the ladies, and presented shell "birds" to her friends Dr. Morrison, Dr. Pilsbry and others.

President Jacobson then announced the close of the opening day session, calling attention as he did so to the panel exhibits at the back of the auditorium. Prepared by Joseph L. Parkhurst of Colonia, New Jersey, they depicted the mollusks of the tide wrack of New York City and vicinity and received appreciative attention during the succeeding days.

The Executive Council met during the two hours following supper. Then Miss Dietrich, house mother of Guild Hall, assisted by Mrs. Holly, entertained at a tea served in the spacious lobby; a gracious touch which sent everybody to bed with a renewed appreciation of the hospitality of Wagner College.

Monday morning's session opened with a showing of Kodachrome slides taken at the 1954 meeting at Durham, New Hampshire; that delightful occasion was recalled vividly as delegates saw themselves eating doughnuts on the early morning field trips and lobster on the rocks at Nubble Light.

FLY LARVAE THAT KILL SNAILS

Clifford O. Berg, Cornell University
with
Edward J. Karlin and John C. Mackiewicz

(Abstract)

Fly larvae representing eighteen species of Sciomyzidae were either observed to kill and feed upon snails or presumed to do so on strong

circumstantial evidence. Larvae of eight species (in five genera) were reared from hatching to pupation on no food other than living snails.

Some of these larvae are aquatic, free-living predators which attack suddenly and kill their victims (fresh-water pulmonate snails) within a few minutes. Then they crawl into the shell and remain there for five or six hours while consuming the soft parts. These larvae are usually found floating, or resting on wet soil, in marshes or near the edges of ponds. They form puparia obviously modified for flotation.

Other larvae seems to have parasitoid habits. We have collected them only within the shells of living and recently killed aquatic and terrestrial snails. Some are known to force their way in between living snails and their shells, begin to feed, and eventually kill the mollusks. Certain of these larvae crawl down into the soil and form barrel-shaped puparia; others pupate within the snail shells, their puparia often being strangely modified to conform with the shapes of the shells. A method of candling shells to detect fly puparia within was demonstrated.

It is suggested that all sciomyzid larvae may kill and feed upon snails in nature and that they may have practical value in the biological control of medically important snails. The latter point is now being investigated.

Fly larvae and puparia found in snail shells and free-living, aquatic larvae and pupae are solicited for the extension of this study. Please leave them alive! Living larvae and pupae or reared adults associated with their puparia are much more valuable than preserved specimens. Living material (including decaying bodies of snails which may contain fly larvae) can be shipped in slightly damp (not wet) peat moss packed *loosely* in a container with openings to admit fresh air. We would gladly pay packing charges and air mail postage.

This instructive paper was illustrated by slides in black and white and in color. Dr. Berg explained that his work is supported by a grant from the National Institutes of Health, U. S. Public Health Service. Weingartner: "Just how does the fly larva kill the snail?" Berg: "That has not been clearly established; whether the larva injects venom, severs or destroys a major nerve center or whether the snail literally bleeds to death, we're not sure." Teskey: "Is the snail floating when attacked?" Berg: "Yes, either floating or gliding along some object at or above the water line. The larva cannot live long below the surface. If it is pulled under immediately after attacking a snail, it drops off, floats back up, and the snail usually escapes." MacMillan: "Can a parasitic wasp go beneath the water surface to deposit eggs into the bodies of aquatic fly larvae?" Berg: "Yes, there are aquatic species, some of which swim with their legs and others which use their wings in swimming under water. Since sciomyzid larvae stay at or very near the surface their parasites may not require aquatic adaptations, however." Van der Schalie: "We should watch for Dr. Berg's fly larvae and pupae in salt marshes as well as in fresh-water habitats; it is suspected that *Melampus* is attacked by one species." Berg: "Yes, we'll welcome *any* fly larvae or pupae associated with snails or any snails suspected of harboring them."

A PREVIOUSLY UNKNOWN MOLLUSCAN FAUNA FROM THE PLIOCENE IN NORTHWEST KANSAS

A. Byron Leonard
University of Kansas

Dr. Leonard's paper was accompanied by several slides illustrating topography and specimens. Jacobson: "Kansas is amazingly rich in fossil shells; once I leaned against the wall of a bank in Manhatten (Kansas) and they were even there, embedded in the stone of which the building was constructed."

OUR DISAPPEARING FAUNA

William J. Clench
Museum of Comparative Zoology

(Abstract)

I seriously question if there is a person here who hasn't seen some area destroyed which at one time gave up a few shells for his or her collection. With our tremendously increasing population, more and more land is being brought under cultivation, even much marginal land is being subjected to the plow. Industrial expansion, particularly in the South, is changing a vast number of our streams.

There is little that any one of us can do to prevent the wholesale destruction which is going on and which will continue to go on. There is, however, a part that all of us can play, namely, the preservation of specimens, even the very common species, in our private and museum collections. Such records stand as facts for future generations of students to use in their studies.

Oil pollution is a factor of considerable importance in destroying life. This is perhaps of major importance in harbors of all the larger seaports. Oil in such places appears to come from two main sources: spillage in fueling ships and from street sewers; this latter source is really very great when you think that every street is contributing oil that is dropped by practically every motor vehicle. However, it is nearly impossible to completely exterminate a marine species though local races are subject to destruction.

I am most deeply concerned with our freshwater mollusks. Not that I am more interested in these groups but rather that their destruction seems more imminent, at least in North America. From our modern historical point of view, destruction of our freshwater forms dates from the early industrialization in the North and more recently in the South. Another situation in the South is over-cultivation and subsequent erosion of the land and the consequent silting of the rivers. The extent of this damage can only be guessed at.

A few bright spots do show up on the screen: The Great Smoky National Park and the Everglades National Park. Both of these areas hold much of our priceless and unique land mollusks. A recent visitor, an Everglades Park warden, stated to me that *Liguus* are on the increase enormously.

Kodachrome slides illustrated Dr. Clench's paper. Jacobson: "Mollusks still live in the cities where conditions are favorable. The Illinois and Michigan Canal, former drainage ditch of Chicago, is very rich, and here in New York not a single species reported by the old timers has died out, in fact, new records are constantly being made." Welch: "But local things *are* being wiped out, no disputing that, and the imports from Europe which used to be showing up all the time are becoming rarer—I mean show up with less frequency."

MacMillan: "In Pennsylvania the Clear Stream Program is saving mollusks along with other aquatic life." Leonard: "In Kansas siltation is a major destructive agent. So far as I can determine, *Campeloma* has been wiped out in Western Kansas; it's hard on all gastropods, doesn't affect the Unionidae quite so much." Van der Schalie: "In replacement problems, restoring populations, etc., we have to know the original fauna. That's why it is so very important to collect now for the need of tomorrow. Often we can't foresee that a region will be depopulated in time to collect ahead."

THE PALEONTOLOGICAL RESEARCH INSTITUTE

KATHERINE VAN WINKLE PALMER, *Director*

(Abstract)

The Paleontological Research Institution was founded in Ithaca, New York on October 12, 1933. At that time, a formal charter was granted by the Regents of the State of New York; with Gilbert D. Harris (the founder), professor of paleontology and stratigraphic geology at Cornell University, his daughter, Rebecca S. Harris, his former students, Pearl G. Sheldon, Axel Olsson, Ralph A. Liddle, Burnett Smith, and Katherine V. W. Palmer as charter members.

Membership, besides those in the United States of America, includes persons from Belgium, Brazil, Canada, Colombia, Cuba, Czechoslovakia, Dominican Republic, France, Germany, Norway, Sweden, Trinidad and Venezuela, with corresponding members from Argentine and China.

Membership is by sponsor and vote, with election twice a year. An invitation is issued to all persons who are interested in the fossil and/or recent faunas.

The purpose of the organization is to collect, receive, and preserve paleontological and geological specimens, data, and literature, to make available such information by publication or other means and to hold in trust funds to carry on work as is involved in its purpose.

The corporation is governed by a board of nine Trustees, three of which are for life. A President, Vice-President, Secretary, Treasurer and Director are elected. The headquarters are in Ithaca, New York. Associated with it at its headquarters is the publication of the Cushman Foundation for Foraminiferal Research.

While the institution is interested in preserving and publishing on all paleontological phases, its major research at its headquarters has been on Mollusca, particularly Cenozoic.

As she concluded, Dr. Palmer remarked that she was glad to follow the previous paper, since the preservation of material is the major aim of the Institute. Her paper was illustrated by scenes of the building during several stages of expansion and pictures of curators of the past.

AUGUSTUS ADDISON GOULD

RICHARD I. JOHNSON
Chestnut Hill, Massachusetts

(Abstract)

Agustus Addison Gould was born in New Ipswich, New Hampshire in 1805. A poor boy, but an ambitious one, Gould entered Harvard Uni-

versity in 1821 and paid his way by working. He began the study of medicine and was graduated from the Massachusetts General Hospital in 1830. This was also the year in which the Boston Society of Natural History was founded. His first Conchological contribution was to bring order to the genus *Pupa.* In 1841 he was asked by the state of Massachusetts to prepare a report on the Invertebrata of the area.

Later he edited the "Terrestrial Air-breathing Molluscs of the United States" left unfinished by his intimate friend Amos Binney. His greatest work was the publication of the shells collected by the United States Exploring Expedition which was accompanied by a folio of colored plates which rivaled those done for the great Continental Expeditions of the period. His last publication was the Otia Conchologica which brought descriptions of all of the some 1,400 mollusks he described under one cover.

Dr. Gould died in 1866. His collection was sold to the New York State Museum for $10,000. In the last decade his marked types were sent to the Museum of Comparative Zoology, but these amounted only to a few hundred. The remainder of the collection which has been sealed for years has recently been given to the United States National Museum and it is hoped that more types will be located in it.

After Dr. Gould's death the names of Binney and Gould were again united in authorship, when in 1870 W. G. Binney, the son of Amos Binney edited the second edition of the "Invertebrata of Massachusetts." After 80 years it is still indispensable to the student of New England mollusks.

Gould was much more than a descriptive zoologist, he edited with Louis Agassiz "Principles of Zoology" and did the first faunistic study of mollusks in this country.

Mr. Johnson had on display a sizable stack of books written by and about this dedicated person, and these he invited his audience to examine as he concluded his interesting biography. Delegates crowded about to get a better look at the huge folio volumes and only the arrival of the lunch hour terminated the show.

The afternoon was given over to a field trip. In a chartered bus 36 persons and others who went in private cars toured a goodly part of Staten Island with stops for inspection and/or collecting at the Historical Museum of Richmond Town, the Boy Scout camp and the Indian Shell Mound at Tottenville.

Supper was followed by another restful evening when it was a delight to sit upon the great stone porch and watch the lights of the ships as they passed up and down the Narrows, far below. It is tranquil interludes such as these evenings afforded which are so much appreciated when the daylight hours have been crowded with things heard and seen, which may then be enjoyed in retrospect. The friendly atmosphere of the annual meetings are remarked by each newcomer; it is the opportunity to become acquainted each with his neighbor that provides such a spirit. A convention with the program packed to the final minute may be more instructive, but then strangers may part still strangers, a sad state of affairs.

The welcome mat was out at the Staten Island Museum on Thursday morning. Special exhibits in the shell motif were in evidence, even to paintings of exotic mollusks which decorated one wall. A small but adequate meeting room in the basement was ready, cooled by fans when the need became evident, and there the first session of the third day was called to order.

Dr. James L. Whitehead, Director of the Staten Island Museum, made a brief address of welcome. It was, he said, the first time that a national science group had held a meeting there and he declared that both he and his institution were deeply honored. He pointed out that Miss Mathilde Weingartner had prepared the shell exhibits and that the paintings were the work of Miss Harriet Lord of Long Island and Nantucket.

President Jacobson thanked Dr. Whitehead on behalf of the A.M.U., and introduced the first paper:

MALACOLOGISTS OF STATEN ISLAND AND NEW YORK

Mathilde Weingartner
New York Shell Club

(Abstract)

Several names stand out in malacological history, people who lived in the New York area.

Temple Prime came from Long Island; because he was trained in the diplomatic field spent much of his life traveling about the world and collected extensively wherever he went. Among other papers he wrote a catalogue of the Corbiculadae.

Silas Wheat, a Brooklyn school teacher, wrote papers on the shells of Long Island for the Brooklyn Institute of Arts and Sciences and about the shells of New Jersey for the State Museum in Trenton.

Louis Pope Gratacap was probably one of the most interesting and versatile of the collectors of this area. He worked for many years at the American Museum of Natural History, arranging interesting exhibits and cataloguing the shells.

Sanderson Smith worked for a number of years for the American Museum of Natural History, helped catalogue that large collection and wrote several papers on the shells of Staten Island, Little Gull Island, and Long Island. He was one of the founders of the Staten Island Museum and for awhile served as president.

John Crooke collected a few of his specimens locally but preserved large collections of land snails from the islands of the Pacific. He lived on the south shore of Staten Island, on a spit of land which was until recently known as Crook's Point.

William T. Davis, one of Staten Island's beloved citizens, collected large numbers of conchological specimens although his main interest was entomology. He labeled each specimen carefully as to date and conditions under which he found it, but was often reluctant to indicate the exact place as he feared that some over-zealous collector might clean out the stand.

All these conchologists contributed materially to the great collections in our museums and were instrumental in furthering the study in this rich field.

This paper was accompanied by slides picturing some of the early malacologists; one scene of a gentleman collecting in rolled trousers and a derby hat caused some amusement although Miss Weingartner remarked that collectors of today will look as quaint to future generations. Bequaert: "That was William T. Davis; I knew him well, made many collecting excursions in his company. And I suggest that these papers be published as a record of the local malacologists." Jacobson: "More biographical data is needed in so many cases; General Totten, for instance: we need to know much more about him; the same may be said for many more of the local collectors of the past. And Crooks Point where Davis did much of his collecting is the site of tomorrow's field trip. A pity that the catalog lists of Staten Island shells in most cases offer no locality data." Bequaert: "An exception to that was Mr. Davis who invariably put the data in his Journal. It was important then and it is important today." Mrs. H. B. Baker: "I notice that William Davis was born in 1862, the same year as Dr. Pilsbry!" Jacobson: "I've read that in their collecting Davis and Bequaert sugared trees for moths which also attracted snails." Bequaert: "That's true!"

HISTORICAL NOTES ON CONRAD'S MONOGRAPHY OF THE UNIONIDAE

H. E. Wheeler
Indian Springs School, Helena, Alabama

(Abstract)

While Conrad was Curator of the Academy of Natural Sciences in Philadelphia, he began, in 1836, the publication of an ambitious work on North American Naiads. By 1840 thirteen parts had been issued, the complete text consisting of 118 pages (pages 13-16 were never published) and 65 plates. Charles A. Poulson underwrote the publication. The original price was $8.00 for the first volume which consisted of ten numbers. Evidentally there were but few subscribers and the project was discontinued after publication of the 13th part of which a very few copies are known.

The work describes 97 species, all from the United States save one new Venezuelan species; at least one-third of all described and figured were from Alabama. Species described by Rafinesque, Say, Lea and others are described and figured from specimens in the author's or the Academy's collections, or loaned by friends. Many of the species are now referred to other genera than *Unio* though some 29 are still held in that genus in Simpson's catalogue.

Of the existing 25 copies of Conrad's *Monography,* so far as now located, 18 are in American museums or libraries, two in private libraries, five in European museums. Most copies are incomplete in one or more particulars, some lacking one or more Parts, original covers rarely present while some lack one or more plates or the complete index. The plates in most copies are colored, and by hand, for color lithography in America was unknown until 1840. The sources of most copies are unknown though a few have original book plates or there is a record of their accession. The finest copies are possesed by the Academy of Natural Sciences, the Museum of Comparative Zoology, the American Museum of Natural History, the University of Michigan and the Natural History Museum of Vienna, Austria. No two copies are exactly alike. Remainders of separate Parts with uncolored plates are still available in the Academy of Natural Sciences, Philadelphia.

Dr. Wheeler concluded by beseeching each of his listeners to be on the lookout for Conrad's books, saying that he should very much like to hear of any being located in the future. He described briefly the restoration process perfected by himself whereby old books are given new interest when their plates have been cleaned and their pages bleached. Jacobson: "One of the charms of New York City is that fascinating hunting ground, the second-hand book stores."

FAMILY RELATIONSHIPS OF THE NORTH AMERICAN FRESH WATER MUSSELS

Joseph P. E. Morrison
U. S. National Museum

(Abstract)

I believe that of all the characters of an animal species, the reproductive characters may be the most fundamental, as well as the most useful in defining and separating the larger groups (families and sub-families) in a complex of many animal species and that the following classification will most clearly indicate the natural relationships of the Pearly Freshwater Mussels living in North America:

Family MARGARITANIDAE, Ortmann 1910.

> **Possessing the smallest, least specialized type of glochidia; interlamellar junctions of gills diagonal, incomplete or complete, but not forming separate "water tubes."**

Family UNIONIDAE, Rafinesque 1820.

> **Possessing triangular, hooked glochidia with long hinge line; gill structure complete, with "water tubes," which, in the gravid female are divided into three tubes, of which only the center one is used as an ovisac. With such a marked tendency toward reduction of the hinge teeth, this family may be arbitrarily divided into three subfamilies, for convenience.**

Subfamily UNIONINAE, Rafinesque, s.s.

> **Hinge of shell complete, with well developed pseudocardinal and lateral teeth.**

Subfamily ALASMIDONTINAE, Rafinesque 1820.

> **Hinge of shell incomplete; often lacking laterals, and with the pseudocardinals also reduced in some.**

Subfamily ANODONTINAE, Rafinesque 1820.

> **Hinge of shell edentulous; rarely with rudimentary hinge teeth only.**

Family AMBLEMIDAE, Refinesque 1820.

> **Possessing glochidia with short hinge line, usually oval; gill structure complete, with "water tubes," which are simple in the gravid female.**

Subfamily AMBLEMINAE, Rafinesque, s.s.

> **Marsupial portions of gills not highly specialized; Sexual dimorphism of shells absent except in *Tritigonia*.**

Subfamily LAMPSILINAE, Von Ihering 1901.

> **Marsupial portions of gills highly specialized, usually permanently so, for the life of the adult female. Specialized mantle structures sometimes also present. Sexual dimorphism of shells present in all genera, in correlation with the high degree of specialization of the brood pouches in portions of the outer gills only.**

Dr. Morrison's paper was illustrated by slides showing several kinds of Mussels and the type of glochidia larva belonging to each. One of the slides showed the male and female with the highly specialized mantle flaps of *Lampsilis,* which are spotted to look like small fish. According to Dr. Morrison's account, they pulsate or jerk intermittently like a wounded minnow, to attract fish during the glochidia shedding season in the spring. Van der Schalie: "I'll admit I'm a disciple of Ortmann. I don't think he would have approved of these radical changes." Morrison: "This new arrangement is really not in conflict with Ortmann; it's just an extension of Ortmann's anatomically based classification. The only change here is the shift of the family name Unionidae, from an unrelated group, to the forms most closely related to *Unio.* The *Anodonta-Alasmidonta* complexes are the only groups in North America belonging to the Unionidae, in the restricted sense." Van der Schalie: "This whole subject of attracting or 'baiting' the fish for the parasitic period is a complicated one, that we don't fully understand, and its study is surely still open. For instance, the pulsation may be a combination of a 'bait' mechanism and one for aeration of the larvae in the gills. Dr. J. Welch of Harvard has been interested in this and has studied these movements in relation to light intensity." Morrison: "I agree that these studies are still very incomplete. Isaac Lea first figured these mantle flaps almost 120 years ago. I've seen them in action a few times in the field, but my only aquarium observations on the mantle flaps of *Lampsilis siliquoidea* were on temperatures, not on light intensity. A rise in water temperature did speed up the rate of pulsation." Weingartner: "I wonder if there is a definite ratio in the numbers of clams and fish. For instance, young trout have died of suffocation when too many glochidia were clamped on the gills." Dee Dundee: "Why should a trout which does not feed on minnows be attracted to a false-minnow bait?" Morrison: "They aren't. The young trout may have gotten too many glochidia on their gills because of crowded conditions in the hatchery, or just out of curiosity during random movements. The *Margaritana,* for which the trout is the natural host, does not have any mantle flaps to attract fish. In the case of the *Quadrula-Amblema* complex (typical Amblemidae), the fish may be induced to pick up the glochidia because they are shed in small packages, or conglutinates, from each of the water tubes, that resemble white (or pink) worms lying on the bottom. In the *Anodonta* species (Unionidae), the glochidia are shed gradually in clear mucus, which the current strings along the bottom, where the fish may brush against the glochidia, to be parasitized not on the gills, but on the skin of fins, tail, etc."

THE AQUATIC GASTROPODS OF KANSAS

A. Byron Leonard
University of Kansas

Dr. Leonard's paper was illustrated by several slides. He remarked that while several species of freshwater gastropods have been wiped out by siltation or pollution, *Physa* seems to thrive on unsanitary conditions and is there to stay.

SYSTEMATICS AND ZOOGEOGRAPHY OF THE NON-MARINE MOLLUSCA OF THE NEW HEBRIDES

Alan Solem
University Museums, University of Michigan

Charts and maps were projected to fix the location of Mr. Solem's paper, then Kodachrome slides of shells alone and in series. He referred to a friendly argument between himself and Mr. Jacobson on occasion of the previous annual meeting; each had sought to convince the other of the advantages of collecting in Cuba vs. New Hebrides. Jacobson: "I have enjoyed this paper immensely; I only wish to observe that in Cuba the last missionary was probably eaten in 1600!"

DEEP SEA CLAMMING

Henry D. Russell
Dover, Massachusetts

(Abstract)

In February, 1954 the Cape Cod Shellfish Corporation was formed; by May a site for operation on the banks of the eastern end of the Cape Cod Canal had been established and one 63 foot dragger was fishing regularly for *Arctica islandica* out of Sandwich, Massachusetts.

The operation consists of three major parts. Gathering the clams is done by means of a dredge with 18 knifeblade-like teeth set on edge to dig into the soft bottom and scoop the clams into a 7 foot bag made of 2½ inch iron rings. Five to ten miles out it is lowered 60 to 120 feet, thirty minutes later raised and contents dumped on deck; clams are washed and sorted into bushel baskets. The boat returns to the plant every evening where the clams are piled on shucking tables.

There the second part of the process takes place when the clams are opened at a rate of one every 3 to 5 seconds by experienced shuckers. The meats drop into perforated stainless steel buckets where they are retained, the juice strains through to be frozen, later used for chowder flavoring, clam juice, cocktails and broth. A filled bucket passes to the preparation room where skilled women eviscerate the clam, removing the digestive gland, stomach and intestines. Next the meats are washed clean of all broken shell and grit then put through an electric chopper. The diced clam goes to the weighing table and each 5 pound lot is poured into a polyothelene bag and placed in a waxed box.

At the freezer, the final process begins; the boxes are slid on trays into a large plate freezer that will hold and freeze 1½ tons in 2½ hours at —20° F. In the large holding room at —10° F. the final product keeps ocean-fresh for at least a year or more.

The company that started a little over a year ago is now operating two draggers and processed 300,000 pounds of clams instead of the hoped-for first year goal of 50,000 pounds.

This was a movie, taking viewers aboard one of the two boats which supply Dr. Russell's Cape Cod Shellfish Corporation with the basic ingredient for clam chowder. The dredges were dropped and hauled, the catch taken back to the factory where the shuckers waited. Washing, eviscerating and grinding was pictured, following which the minced clams were frozen and stored until needed. The kitchens of several famous restaurants were shown, each of course serving the Russell clams as chowder.

Jacobson: "Is it more necessary to eviscerate *Arctica islandica* than other edible clams—*Venus mercenaria,* for instance?" Russell: "Perhaps not more necessary, but aesthetically desirable; they live and feed on muddy bottom and the stomach content shows as black blotches." Dr. E. Laurence Palmer: "Is the species maintaining itself?" Russell: "It is too soon to tell. Our dredges have large holes so that the small clams fall back; however, a study of the life history, breeding cycle, etc., should be made." Mrs. Richard Johnson: "How many do you employ?" Russell: "Forty, including the boat crews." John Dyas Parker: "In viewing the large pile of shell, I wonder that you do not sell it to the Chesapeake Bay oystermen who are always needing shell for spat." Mrs. Julius Wisoff: "Would it not be more practical to shuck by machine?" Russell: "So far no such process has been developed."

At this point President Jacobson called a halt to discussion, since a treat in the form of a delicious luncheon had been prepared by the ladies of the museum staff and was waiting on the second floor. With appetites sharpened by the discussion just past and with appreciation of the hospitality of the Staten Island folk, the delegates did justice to the feast, convened an hour later for the final session which began with the annual business meeting.

The secretary-treasurer reported a June 1, 1955 membership of 537, an all-time high and a gain over the previous year of 52. The cash balance for the same date was $937.55; these reports had been received by the Executive Council and approved as read.

Of the membership at large who voted on the proposed changes in articles 3 and 4 of the Constitution, 156 ballots had been marked for, 6 against adoption of the revision, hence the organization acquired a publications editor and the fee for life membership increased to forty dollars as of July 26th, 1955.

The decision as to time and place of the 1956 annual meeting had been tabled pending consultation with the president-elect.

The Council had placed the following slate in nomination to fill the offices for 1955-56: President, Allyn G. Smith; Vice-President, Ruth D. Turner; Second Vice-President, Edward P. Baker; Secretary-Treasurer, Margaret C. Teskey; Publications Editor, George M. Moore; Councillors-at-Large, R. Tucker Abbott, Ralph W. Jackson; Katherine van Winkle Palmer; Júan J. Parodiz. It was moved, seconded and carried that the secretary be instructed to cast a ballot for unanimous election of these officers.

The secretary made her annual request for abstracts of the papers, added a plea for support of the new publication, "How to Collect Shells." She suggested that autographed copies would make fine souvenirs of the present occasion and from the number which were circulated for signatures later in the day it was evident that the idea found favor.

Mr. Jacobson thanked his constituents for their support during his tenure in office, pledged his support to the new president and vice-president, then declared the business meeting closed.

Before papers were resumed, Dr. Katherine van Winkle Palmer asked permission to introduce one of the guests whom she had just learned was a niece of a charter member, the late Junius Henderson. A rousing ovation testified that Professor Henderson's friends have not forgotten him.

NOTES ON THE SPINY FRESHWATER MUSSELS (CANTHYRIA)

Joseph P. E. Morrison
U. S. National Museum

(Abstract)

One of the least-known yet more interesting of all the various types of North American Pearly Freshwater Mussels is the small group that possesses true spines on the shell. For many years there has been a grow-

ing suspicion that they might be extinct. The recent rediscovery of living *Elliptio spinosus* (Lea) at least partly disproves this suspicion.

One of Conrad's new species from Virginia is another member of this spinose group. *Elliptio (Canthyria) collina* (Conrad) was described in 1837 from the North River, a tributary of the James, near Lexington, Virginia. In the literature we find that Isaac Lea in his Synopsis and later Frierson in his Checklist listed *collina* in the *spinosa* group. C. T. Simpson, in his Synopsis, and in the Descriptive Catalogue of the Naiades did not place *collina* in the spiny group, but listed it under the unrelated genus *Alasmidonta.*

To summarize our present knowledge of *Canthyria:* (1) The species *spinosa* (Lea) 1836 is still living in the Altamaha River, Georgia. (2) There may be (or was?) an unnamed species living in South (or North) Carolina, of intermediate size and prominence of spines. (3) The species *collina* is represented in the U. S. National Museum collections by specimens collected by Haldeman and acquired by Lea between 1838 and 1852, and by a few specimens collected in 1889 (?) and 1898 (?) by other individuals from Lexington, Virginia.

We now know that *spinosa* is not yet extinct in the Altamaha, but where and what is the Carolina species? And with no records of collection since 1898, is *collina* from the James River System in Virginia now extinct?

COLLECTING MARINE MOLLUSKS IN PUERTO RICO

Germaine L. Warmke
Mayaguez, Puerto Rico

(Abstract)

This was a summary of the author's experiences while collecting shells in Puerto Rico for the past nine years. It all started when a few shells were brought home from the beach; this led to classifying, then more beaches had to be explored. The next step was collecting sand samples from all around the Island, and finally, dredging. The mimeographed sheets distributed were a table summarizing the history of mollusk collecting in Puerto Rico; a second table gave the status of the author's collection which at present has 688 species. Some of these are new species, a great many are new records for the island.

Before Mrs. Warmke began to speak, she presented each of her listeners with a mimeographed sheet listing numbers of recognized species as of several dates, a convincing record of the rapid growth of the Puerto Rican check-list. Beautiful Kodachrome slides of the scenery about her island home, the marine laboratory and some of the shells to be collected there brought sighs of envy from those who know the joy of collecting on a tropical beach. Wurtz: "Who sponsors the laboratory?" Warmke: "The University of Puerto Rico."

FRESH-WATER MOLLUSKS AND STREAM POLLUTION

Charles B. Wurtz
Philadelphia, Pennsylvania

(Abstract)

Fourteen species of Pelecypoda and twenty species of Gastropoda are recorded as being tolerant to some degree of pollution in the zone of

degradation or the recovery zone of a stream. No mollusk is known that is tolerant of gross pollution. The tolerance displayed is in relation to organic pollution rather than chemical or physical pollution. The species concerned follow:

Pelecypoda: *Mytilopsis leucophaetus* (Conr.); *Rangia cuneata* Gray; *Sphaerium rhomboideum* (Say); *Sphaerium corneum* (L.); *Sphaerium striatinum* (Lam.); *Sphaerium sulcatum* (Lam.); *Sphaerium (Musculium) securis* Prime; *Sphaerium (Musculium) transversum* (Say); *Pisidium amnicum* (Müll.); *Pisidium casertanum* (Poli); *Pisidium compressum* Prime; *Pisidium fallax* Sterki; *Pisidium henslowanum* (Sheppard); *Pisidium subtruncatum* Malm.

Gastropoda: *Campeloma integrum* (Say); *Campeloma rufum* (Hald.); *Bulimus tentaculata* (L.); *Lymnaea caperata* Say; *Lymnaea humilis* Say; *Lymnaea obrussa* Say; *Lymnaea palustris* (Müll.); *Lymnaea stagnalis* (L.); *Lymnaea auricularia* (L.); *Pseudosuccinea columella* (Say); *Helisoma anceps* (Menke); *Helisoma trivolvis* (Say); *Gyraulus arcticus* (Müll.); *Menetus dilatatus* (Gould); *Aplexa hypnorum* (L.); *Physa gyrina* Say; *Physa heterostropha* (Say); *Physa integra* Hald.; *Ferrissia fusca* (C. B. Adams); *Ferrissia tarda* (Say).

(This list includes only those species that are native to North America or have been introduced into North American waters.)

Jacobson: "It is interesting how species with a high degree of tolerance replaces the native species; I am reminded how rapidly *Congeria leucopheata* is progressing up the Hudson, for instance. And is it not possible that naiads are not present because the host fishes cannot survive the polluted water?" Wurtz: "Entirely possible."

THE DISTRIBUTION AND VARIATION OF *ACHATINELLA BULIMOIDES* ON THE ISLAND OF OAHU, HAWAII

D'Alte A. Welch
John Carroll University

(Abstract)

Achatinella bulimoides Swainson occurs in the northern portion of the Koolau Range. On the leeward slope it is found with *Achatinella apexfulva* Dixon. *A. bulimoides* does not show the striking multicolored altitudinal and valley to valley variation found in *A. apexfulva*. *A. bulimoides* does show a change from lowland white color forms in zone II (below 1500 ft.) to yellow and brown color patterns in highland zone III (above 1500 ft.), along the same line that demarks the change in *A. apexfulva* from lowland streaked patterns to highland banded ones. To the north, in Kawailoa, the shells in zone II change from white to brown banded patterns and in zone III from brown to gray-brown. On the windward slope the color forms of the shells are not zoned into highland and lowland forms. Going from the northwest to the southeast, the shells break up altitudinally, on three main ridges, into 2, 3, and 6 distinct races respectively. The horizontal or valley to valley variation in this same region is markedly different.

On the leeward slope of the Koolau Range *A. bulimoides* shows a tendency for the mean length of the shells to decrease with increase of elevation, or increase of rainfall. This is similar to what is found in *A. mustelina* Mighels of the Waianae Mountains, Oahu. *A. apexfulva*, how-

ever, over its entire distribution in the Koolau Range, shows the reverse, having a slight tendency towards size increase with increase of elevation.

On the windward slope of the Koolau Range *A. bulimodes* does not show a tendency towards size decrease with increase of elevation although the lowest localities have large shells with a mean length of 22+ - 21+ mm not found in the higher localities. Localities containing shells with mean lengths of 18+, 19+, 20+ mm are scattered below localities containing larger shells, so that no definite trend can be noted.

From these data, geographic isolation appears to be the most prominent feature in the variation of *A. apexfulva* and *A. bulimoides.* No general clinal gradient exists for color or size variation in either species, over the entire area of distribution in the Koolau Range. Limited areas on both slopes of the mountain range do show small gradients both in color and size. These, however, are indistinct characteristics as compared with the more obvious one of geographic isolation.

Dr. Welch's paper was illustrated by projected maps, charts and photographs of assortments of shells. Since time was growing short no discussion of this paper was permitted.

LIFE AND WORK OF WILLIAM H. DOHERTY

H. E. Wheeler
Indian Springs School, Helena, Alabama

(Abstract)

Doherty was born in Cincinnati, Ohio in 1857; while too sickly as a child to go to school, yet he passed the entrance examinations to Yale University before he was twenty. As a member of the Commission he helped install the American exhibits at the Paris Exposition, then toured Europe on foot; he visited every country and learned rapidly French, German, Russian, later Turkish and modern Greek. Later he toured Palestine, Persia and Arabia on horseback, then visited Mesopotamia, Upper India, the borders of Thibet, learning as he went and collecting butterflies and beetles, shells and fish. These he sold to museums in Germany and England. His travels covered 28 years and took him to various islands in the Orient, Celebes, Philippines, Burma, Malay Archipeligo; always he lived with the people, learning their language.

Notes of his adventures, intended for publication, were stolen along with his collection, but undiscouraged he moved on, collecting, shipping thousands of specimens, writing stories for London and New York newspapers and scientific journals in India and Europe. His molluscan collections were in part purchased by T. H. Aldrich.

The last two years of his life were spent in Eastern Africa collecting thousands of birds which were added to the great Rothschild collections but which are now in the American Museum of Natural History. His health now badly broken, he succumbed in the prime of his life to an attack of dysentery and died in a hospital in Nairobe.

As with his previous paper, Dr. Wheeler explained that his biographical research is by no means completed, and he invited his listeners to examine the material—manuscript, photographs, books, etc., which he had amassed as his work progressed. Again time did not permit questions nor comment.

The following two papers read by title:

BILHARZIASIS IN EGYPT

Henry van der Schalie
University Museums, University of Michigan

(Abstract)

The most serious disease in Egypt today is bilharziasis (schistosomiasis). More than half the people of Egypt are afflicted with one of the two forms of bilharziasis that are known there, many from both. Medical authorities estimate that it is responsible for one out of every five deaths in the country.

Two varieties of snails, *Bulinus truncatus* and *Biomphalaria boiseyi* are carriers of the disease; living in polluted water, they are host to the parasite which, after a suitable period, cause the snail to produce the infective cerceriae in tremendous numbers. Anyone who washes or bathes in this water is in constant danger that the cerceriae will attach themselves to his skin and bore into his body. The damming of the Nile has increased the danger of bilharziasis since the snails live and breed more profusely in stagnant or sluggish water.

For many years, the Egyptian government has been working on bilharziasis control; the newest project is an effort of the Ministry of Health with the collaboration of the World Health Organization. This involves a special tract of land where all the most modern methods of control are concentrated; snail carriers are destroyed, sanitary measures introduced, infected persons treated and educated. For treatment is of no use unless people can be taught to avoid polluting the canals. Most important is a well-informed public and in this schools, newspapers, and every other known method of public education have a part.

This concentrated plan offers hope not only to the 10,000,000 people who suffer from bilharziasis in Egypt, but to the hundreds of millions throughout the world who are exposed to its ravages. Its lessons will be applied wherever governments and the World Health Organization can find the money and the necessary personnel to organize the fight.

CEPEA NEMORALIS LINNE IN ROCKAWAY, NEW YORK

Morris K. Jacobson
New York Shell Club

(Abstract)

There were four colonies of this snail in Rockaway at the Beach at 136th Street and the Boulevard, at the Beach at 139th Street and Newport Avenue, at the Beach at 140th Street near Newport Avenue and at the Beach at 145th Street and Neponsit Avenue, the first two having been destroyed recently by extensive building activities. Rockaway is a sand spit with practically no native top soil, all of which has to be brought in from various localities on Long Island. Hence these colonies can be only from 25 to 40 years old. Nevertheless in three of the colonies the animals are so characteristic in size, color and banding that they can be with ease separated one from the other. Evidently each of these colonies, which are not extensive in either numbers (500 to 1000 individuals) or area (2 to 4 city lots) were founded by a pair or even a single snail introduced acci-

dentally, which, because it was completely isolated by intervening pavements and streets, tended to perpetuate its own gene characteristics. It would appear that the situation of the Cepea in Rockaway is not dissimilar to that of Liguus in Florida. In the latter case too we have small isolated colonies probably founded by one or two hurricane-introduced snails. Perhaps the Cepea of Rockaway can permit one to speculate on the age of some of the Liguus colonies of the Everglades.

Thus was completed the academic portion of the meeting, and with the annual dinner but two hours away, the delegates made a hasty behind-the-scenes tour of the museum, then repaired to Wagner College to don party clothes. Luckily the weather moderated just in time to make coats for the men comfortable rather than a chore, and an excellent steak dinner preceded a very full (no pun) evening. Dr. Pilsbry and Dr. Clench made brief speeches thanking Wagner College for the many courtesies extended to the Union, praising too the unflagging efforts of Chairman Jacobson and Mr. and Mrs. D'Attilio which had caused the meeting to proceed so smoothly. Dr. Turner thanked her colleagues for the honor bestowed upon her and pledged all possible aid and support to the new president. An ovation for groups of guests from various parts of the country ended with spirited applause for the most distinguished of them all, the gentleman from Philadelphia, Dr. Henry Augustus Pilsbry!

Adjourning to the lobby of Guild Hall, guests were entertained in memorable fashion. First was shown a short reel of movies taken by Dr. Henry Russell on the occasion of the 1941 meeting at Rockland, Maine. There Cupid was an uninvited but welcome guest, and there for the last time two faithful members signed the register as Miss Bernice Barker and Horace B. Baker. Brief shots of the two as they strolled the paths oblivious of the camera foretold of things to come.

"Some Snails We Knew," a hilarious dialog between two specimens of *Cepaea nemoralis* (Jacobson & D'Attilio) when they met on a garden path, brought down the house. "Remember," bridled Moe-snail, offended by suspected ribaldry in one of Joe-snail's remarks, "Half of me's a lady!"

And finally a color movie by William H. Loery, M.D., and narrated by himself transported a rapt audience across the Pacific to Guam, and to scenes in which living mollusks played leading roles. Dr. Loery calls himself an amateur in the art of photography, but his films compare favorably with any commercial travelog and provided a fitting climax to a most enjoyable evening.

Friday morning was given over to a field trip to Oakwood Beach in Great Kills Marine Park. Low tide disclosed boring mollusks in a peaty reef; tide pools crawled with *Nassarius obsoletus, Littorina littorea,* and with occasionally other denizens; the sun was warm and the sea air refreshing. A good time was had by all!

The last sentence may well be repeated to express the sentiments of everybody who attended the meeting; a good time was past but more are to come.

MARGARET C. TESKEY, *Secretary*
American Malacological Union

DELEGATES TO TWENTY-FIRST ANNUAL MEETING, AMERICAN MALACOLOGICAL UNION

Front row, left to right: Mrs. Fred St. John Hoffman, Mrs. Wallace Ashbery. Dr. Henry A. Pilsbry, Dr. Jeanne S. Schwengel, Dr. Henry D. Russell, Mr. Heathcote Woolsey, Mrs. Adlai B. Wheel, Mrs. Henry van Felix, Mrs. Lilias Cockerill, Dr. Juan J. Parodiz, Mrs. Juan J. Parodiz, Dr. Joseph C. Bequaert.

Second row: Mrs. Alger P. Blaine, Mr. Alger P. Blaine, Mr. Morris K. Jacobson, Mrs. H. M. Bixby, Dr. R. Tucker Abbott, Mr. Adlai B. Wheel, Mrs. Germaine L. Warmke, Mr. Henry van Felix, Mrs. Margaret M. Teare, Mrs. Mariana Paulson, Dr. Ruth D. Turner, Dr. A. Byron Leonard.

Third row: Mr. Anthony D'Attilio, Mr. Edward F. Cowles, Jr., Mr. Harvey G. Meyer, Dr. Henry van der Schalie, Dr. Clifford O. Berg, Dr. Charlotte Dawley, Mr. Harold J. Walker, Mrs. William J. Clench, Mrs. Anthony D'Attilio, Dr. J. Chester Bradley, Mr. Harlem B. Ives.

Fourth row: Dr. E. Laurence Palmer, Miss Mathilde Weingartner, Dr. Rosemary Clark, Mrs. Harold Dundee, Mr. Harold Dundee, Mrs. Ralph W. Jackson, Mrs. Z. W. Craine, Miss Letha Allen, Mr. James W. Poling, Mrs. Horace B. Baker, Dr. William J. Clench, Dr. Joseph P. E. Morrison, Mr. Michael Morrison.

Last row: Dr. Harry E. Wheeler, Mr. Eugene H. Schmeck, Mr. Martin J. Chicoine, Mrs. Margaret C. Teskey, Mr. Murray E. Reed, Miss Marjorie Love, Mr. Edward Karlin, Dr. Katherine van Winkle Palmer, Mrs. Harvey G. Meyer, Mr. Ralph W. Jackson, Mrs. Gertrude W. Thompson, Mr. Gordon K. MacMillan, Dr. Horace B. Baker, Dr. d'Alte Welch, Mr. Richard I. Johnson, Mrs. Richard I. Johnson, Mr. Alan Solem, Mr. G. Usticke.

MEMBERS AND VISITORS IN ATTENDANCE

Dr. R. Tucker Abbott, Philadelphia, Pennsylvania
Mrs. R. M. Abbott, Birmingham, Alabama
Miss Catherine Ahders, New York City
Miss Letha S. Allen, Baltimore, Maryland
Mrs. Wallace H. Ashbery, Buffalo, New York
Dr. and Mrs. H. Burrington Baker, Philadelphia, Pennsylvania
Dr. Joseph C. Bequaert, Cambridge, Massachusetts
Dr. Clifford O. Berg, Ithaca, New York
Mrs. H. W. Bixby, Captiva, Florida
Mr. and Mrs. Alger P. Blaine, Springfield, Massachusetts
Dr. J. Chester Bradley, Ithaca, New York
Mr. Martin J. Chicoine, Washington, D. C.
Dr. Rosemary Clarke, Deland, Florida
Dr. and Mrs. William J. Clench, Cambridge, Massachusetts
Mrs. Lilias F. Cockerill, Sanibel, Florida
Miss Nessa Cohen, New York City
Mr. Edward F. Cowles, Jr., New Rochelle, New York
Mrs. Z. W. Craine, Norwich, New York
Mr. and Mrs. Anthony D'Attilio, Valley Stream, New York
Miss Sandra D'Attilio, Valley Stream, New York
Mr. Lawrence D'Attilio, Valley Stream, New York
Dr. Charlotte Dawley, Greensboro, North Carolina
Mr. and Mrs. Harold A. Dundee, Ann Arbor, Michigan
Mr. and Mrs. Henry Dodge, Scarsdale, New York
Dr. Robert Flipse, Jamaica, New York
Dr. Asela B. Franco, Cebu City, Philippine Islands
Mrs. Fred St. John Hoffman, Buffalo, New York
Mr. Harlem B. Ives, Detroit, Michigan
Mr. and Mrs. Ralph W. Jackson, Cambridge, Maryland
Mr. and Mrs. George Jacobs, New York City
Mr. and Mrs. Morris K. Jacobson, Rockaway, New York
Mr. and Mrs. Richard I. Johnson, Chestnut Hill, Massachusetts
Mr. Edward Karlin, Ithaca, New York
Mr. Nick Katsaras, Bergenfield, New Jersey
Mr. Michael B. Krassner, Brooklyn, New York
Dr. A. Byron Leonard, Lawrence, Kansas
William H. Loery, M.D., Staten Island, New York
Miss Marjorie LeC. Love, Brooklyn, New York
Mr. Gordon K. MacMillan, Pittsburgh, Pennsylvania
Mr. and Mrs. Harvey G. Meyer, Knoxville, Tennessee
Dr. Joseph P. E. Morrison, Washington, D. C.
Mr. Michael Morrison, Washington, D. C.
Dr. E. Laurence Palmer, Ithaca, New York
Dr. Katherine V. W. Palmer, Ithaca, New York
Mr. John Dyas Parker, Philadelphia, Pennsylvania
Mr. Joseph L. Parkhurst, Jr., Colonia, New Jersey
Dr. and Mrs. Júan J. Parodiz, Pittsburgh, Pennsylvania
Mrs. Marianna Paulson, Berkeley, California

Dr. Henry A. Pilsbry, Philadelphia, Pennsylvania
Mr. James W. Poling, New York City
Mr. Murray E. Reed, St. Petersburg, Florida
Dr. Harald A. Rehder, Washington, D. C.
Dr. Henry D. Russell, Duxbury, Massachusetts
Mr. Eugene H. Schmeck, Niagara Falls, New York
Dr. Jeanne S. Schwengel, Scarsdale, New York
Mr. Alan Solem, Ann Arbor, Michigan
Mrs. Margaret M. Teare, Buffalo, New York
Mrs. Margaret C. Teskey, Marinette, Wisconsin
Mrs. Gertrude W. Thompson, New Haven, Connecticut
Dr. Ruth D. Turner, Cambridge, Massachusetts
Mr. G. Usticke, New York City
Dr. Henry van der Schalie, Ann Arbor, Michigan
Mr. and Mrs. Henry van Felix, Otisville, New York
Mr. Harold J. Walter, Ann Arbor, Michigan
Mrs. Germaine L. Warmke, Mayaguez, Puerto Rico
Miss Mathilde Weingartner, Staten Island, New York
Dr. D'Alte A. Welch, Cleveland, Ohio
Mr. and Mrs. Adlai B. Wheel, Syracuse, New York
Mr. Harry E. Wheeler, Helena, Alabama
Julius Wisoff, D.D.S., and Mrs. Wisoff, Neponsit, New York
Mr. Heathcote Woolsey, Kent, Connecticut
Mr. and Mrs. Charles B. Wurtz, Philadelphia, Pennsylvania

1956 ANNUAL MEETING

The twenty-second annual meeting will be held in San Diego, California, July eleventh thru fourteenth, 1956. The American Malacological Union will be the guest of the American Malacological Union, Pacific Division, whose members are busily making plans for the biggest and best meeting ever. Let us resolve that it shall also be the best attended. An announcement will be sent to all members as soon as program has been drafted.

The idea of a supplementary meeting to be held somewhere in the East was raised at the 1955 annual meeting. A poll of the Council members present found several to be in favor of such a meeting; however, subsequent inquiries by the President have failed to discover any person or group willing to assume the responsibility of organizing and conducting such a gathering, which could have no official status. It seems expedient therefore to abandon the idea, urging instead that an extra effort be made to attend the San Diego meeting.

THE AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

Eighth Annual Meeting, July 15, 16, 1955

Department of Geology, Stanford University, California

OFFICERS

Chairman, RALPH O. FOX *Vice-Chairman,* EDWARD P. BAKER
Secretary-Treasurer, RUTH E. COATS

The following officers were elected to serve for the year 1956: Chairman, Edward P. Baker; Vice-Chairman, Albert M. Mead; Secretary-Treasurer, Ruth E. Coats.

PAPERS READ AT THE EIGHTH ANNUAL MEETING:

ANOTHER LOOK AT THE GIANT TROPHON, *FORRERIA BELCHERI;*

Mr. and Mrs. Crawford N. Cate, Los Angeles

A FEW MINOR PELECYPOD GROUPS REVISED FOR THE "TREATISE OF INVERTEBRATE PALEONTOLOGY";

Dr. Myra Keen, Stanford University

(Abstract)

Because of the size of the task, it is a pleasure for any of the collaborators on the "Treatise" to be able to report virtual completion as their assignments as can be done here.

The Nuculacea are considered to comprise two families, the Nuculidae and the Nuculanidae, the latter being revised by Mr. Harbans Puri. The Nuculidae comprise nine genera, mainly fossil groups. The principal genera are *Nucula* (with six subgenera) and *Acila.* Most West American species fit into *Nucula,* s. s.—with crenate interior margins—or *N. (Leionucula* [formerly *N. (Ennucula)*], with smooth margins.

The Nucinellidae are of uncertain position systematically. As the shells are not nacreous, there is no close affinity to Nuculacea. For both the contained genera, *Nucinella* and *Cyrilla,* nomenclatural problems remain to be solved. It may be necessary to abandon *Cyrilla* as a name in favor of the prior *Huxleyia.* This is a small family, with only about 30 species, ranging in time from Jurassic to Recent.

The Philobryidae are also of uncertain position. The type genus, *Philobrya,* is restricted to the Quaternary of Western North America, but the remainder of the family—4 subgenera and 3 genera—are distributed in the New Zealand-Australian area, Eocene to Recent.

Of the mainly fresh-water group Corbiculacea little need be said here, as there are few species represented in the western United States.

SOME RARE BOOKS IN THE STANFORD CONCHOLOGICAL LIBRARY;

Dr. Myra Keen

(Abstract)

Linnaeus in his documentation of molluscan species made reference to some forty works. Of these, Stanford library has succeeded in obtaining about one-third, dating from 1655 to 1742. In addition, Stanford has almost all of the works published between 1758 and 1792 that were cited in Gmelin's 13th edition of the "Systema Naturae."

A complete set of the first edition of Martyn's "Universal Conchologist" and a copy of Middendorff's "Beiträge . . ." bearing the personal bookplate of Czar Nicholas are prized holdings.

A number of collectors' items also are included in the library—works of artistic merit and rarity although scientifically unimportant—notably two large suites of exquisite unpublished color plates prepared in the early part of the last century.

ASSYMMETRY IN THE *PECTEN GIBBUS* COMPLEX;

Dr. Josh L. Baily, Jr., San Diego Society of Natural History

HOW MANY *SYNCERA* SPECIES ARE LIVING IN DEATH VALLEY?

Dr. Joseph P. E. Morrison, U. S. National Museum; read by Dr. Wendell O. Gregg

(Abstract)

Reexamination of freshwater species of the family Hydrobiidae from Death Valley has resulted in the discovery of a single specimen of what may be a new species of *Syncera,* normally a sea-shore genus. This was found in the material collected during the Death Valley Expedition over sixty years ago at Saratoga Springs by E. W. Nelson and Vernon Bailey, which was reported on by R. E. C. Stearns originally in North American Fauna No. 7, published in 1893.

The probable habitat of *Syncera* in Saratoga Springs is discussed with the conclusion that it will be rediscovered in the marshy area near the Springs rather than in the Springs proper. The relationship between this species, *S. infima* Berry 1947 from Badwater in Death Valley, and *S. californica* Tryon 1865 from the Pacific Coast are commented on, together with the possible origin of the inland species. Description of the new species is withheld pending the collection of additional *Syncera* material from Saratoga Springs, or other nearby localities in Death Valley.

REMARKS ON SOME TYPE SPECIMENS FROM THE GULF OF CALIFORNIA DESCRIBED BY A. E. VERRILL;

Dr. Leo G. Hertlein, California Academy of Sciences

A SYSTEMATIC ARRANGEMENT OF ROCK SHELLS, FAMILY MURICIDAE;

Mr. John Q. Burch, Los Angeles

VARIATION FACTORS IN WEST COAST ABALONES, GENUS *HALIOTIS*;

Mr. Robert R. Talmadge, Willow Creek, California

(Abstract)

In the past over one hundred and fifty names have been applied to the *Haliotis* throughout the world. There are probably less than one hundred valid species and subspecies. A great number of the names are synonyms, but certain factors separate some of these names from typical synonyms.

These factors may be classed as age, range variations, ecological specimens, pathological specimens, or hybrids. Certain specimens indicate a single factor, others indicate two or more. These factors may be found in individual specimens or in population groups.

It is suggested that these names be retained as *formas* until a better picture of the distribution and systematics may be worked out, as evidence now indicates that a number may be geographical races of known species.

RELATION BETWEEN DIET AND COLORATION IN THE TOP SHELL, *TURBO CORNUTUS*;

Dr. Takashi Ino, Tokai Regional Fisheries Laboratory, Tokyo, Japan

(Abstract)

The topshell, *Turbo cornutus,* which is common on rocky shores along the warmer area of Japan were kept in the different containers according to algal diet, *Eisenia, Gelidium* and *Sargassum,* for one year under the sufficient feeding of each diet. The change of shell coloration in the newly secreted parts of the shell was compared as well as the difference of growth rate in each groups.

***Eisenia* (Brown algae) showed white color in the newly produced part of the shell. *Sargassum* (Brown algae) showed the same tendency as the *Eisenia* but more brownish. On the other hand, the color changed dark greenish black mixed with brown in *Gelidium* (Red algae). The change of diet was clearly shown as a masaic in the same individuals.**

The shell weight of individuals growing under *Eisenia* alone showed an average 134% during the course of experiment, 73% in *Gelidium* group and 30% in *Sargassum* group. When the increase of weight for every month is compared, these values were not even and 4-5 peaks were noticed during a year.

DENIZENS OF THE MONTEREY SHALE;

Mr. Merton E. Hinshaw, Pacific Grove Museum

STANFORD'S CONTRIBUTIONS TO MALACOLOGY;

Dr. S. Stillman Berry, Redlands, California

DEMONSTRATION OF PLASTIC EMBEDDING TECHNIQUE;

Dr. Rudolph Stohler, University of California

ADDITIONS TO THE FAUNA OF GUADELUPE ISLAND, MEXICO;

Mr. Emery P. Chace, San Diego Society of Natural History

THE SHELL COLLECTION OF THE CHICAGO HISTORY MUSEUM;

Dr. Fritz Haas, Chicago Natural History Museum

BIOLOGICAL CONTROL OF THE GIANT AFRICAN SNAIL;

Dr. Albert R. Mead, University of Arizona

PLANS FOR THE MOLLUSK COLLECTION OF THE UNIVERSITY OF CALIFORNIA DEPARTMENT OF ZOOLOGY;

Dr. Rudolph Stohler

STUDIES ON FOOD AND FEEDING OF THE CONE SHELLS, GENUS *CONUS;*

Mr. Alan J. Kohn, Osborn Zoological Laboratory, Yale University, and Hawaii Marine Laboratory, University of Hawaii

(Abstract)

The nature of the food of thirteen species of *Conus* which occur on Hawaiian coral reefs is presently under investigation as part of a study of the comparative ecology of this genus. Since many species of *Conus* occur in an apparently uniform environment (narrow fringing reef), and since all are carnivorous, it was thought that food preferences might represent a significant factor in ecological isolation, or the reduction of competition between closely-related species.

Results of preliminary experiments support this hypothesis. Eleven of the thirteen species under consideration feed exclusively on polychaete annelids of two groups, the family Nereidae and the superfamily Eunicea. Specific differences in prey organisms were found to occur among the different species of *Conus*. However, the samples studied to date have been small, averaging only 20 individuals per species, and the results are hence merely suggestive. Continuation of the research will include more extensive sampling.

Two of the *Conus* species studied do not prey on annelids. *Conus pennaceus* Born feeds on an opisthobranchiate snail, probably *Haminoea crocata* Pease, while *Conus striatus* Linné is piscivorous, apparently being able to seize and paralyze small fishes of the tide pools.

The unique feeding mechanism and the digestive system of *Conus* were described. The prey organism is paralyzed by poison contained in the lumen of the detachable radula tooth and is rapidly sucked in the expanded proboscis. As is typical of carnivorous gastropods, there is no stomach. The food is stored in a large crop and gradually pushed into the intestine, where digestion and absorption occur extracellularly.

The anatomy and physiology of the poison apparatus were briefly described. The venom is probably produced in the duct rather than in the muscular structure known heretofore as the poison gland. Its chemical nature is unknown.

A PROPOSED CHECKLIST OF THE WEST INDIAN MARINE MOLLUSKS;

Mr. Robert Robertson, to be read by Dr. Myra Keen

(Abstract)

A check list of West Indian marine mollusks is much needed. A start toward one is being made as part of studies at Stanford University. The preliminary stage of the work will concern only the Bahamas but it is planned to expand the scope to include the whole of the West Indies, a task that will take a number of years to complete. In the final work it is

planned not only to include a conventional compilation of data from literature but also the results of personal observations on ecological associations acquired in several summers of field work.

THE WEST COAST'S CONFUSED AND CONFUSING WHITE SLIPPER SHELLS, *CREPIDULA*, SUBGENUS *IANACUS*;

Dr. S. Stillman Berry

(Abstract)

A study of the larval coils of the white slipper-shells, forming the subgenus *Ianacus* of the genus *Crepidula* Lamarck, has revealed marked differences among them, which are generally obscured or lost in the often almost indistinguishable adult shells, but are nevertheless believed to be reliable for specific discrimination. *Ianacus* attains its richest development in west North American waters, where the following five species are here recognized as valid:

(1) *C. lessonii* Broderip, (2) *C. squama* Broderip, (3) *C. nummaria* Gould, (4) *C. perforans* Valenciennes, (5) *C. williamsi* Coe.

The imperfections of the material seen prevent reliable allocation of *C. glottidiarum* Dall. *C. nummaria* and *C. perforans,* as here understood, have pelagic larvae, whereas *C. williamsi* has a creeping larva, a difference in habit which is reflected in the formation of the larval shell and the way in which it is translated into the next succeeding stage. In those species with a creeping larva this transition is gradual and smooth. In those with pelagic larvae it is abrupt and marked by a varical thickening or welt-like fold. If its living larva remains unobserved, a given species may be interpreted by reasonable inference from the shells of the better known. Such are *C. squama* and *C. lessonii,* where the shell morphology seems clearly indicative of a free-swimming larval stage. In both instances the larval shell is further set apart from all the rest by the presence of a strong axial ribbing. The existence of such wide diversities in the larval shell within the confines of a single restricted group as compact as the subgenus *Ianacus* emphasizes the fallacy of reliance upon a single character in classification, and runs strongly counter to the dictum that whereas the morphology of the nepionic whorls may seem basic to a rational taxonomy of one particular group it must necessarily follow that it is equally fundamental in another.

STUDIES ON MOLLUSK POPULATIONS — III

Dr. Rudolph Stohler

(Abstract)

In August 1919 Dall described a variety of the brown turban from Monterey as *Chlorostoma brunneum* var. *fluctuosum.*

This variant of the regular *Tegula brunnea* (Philippi) may be found in almost any population of brown turbans and it seems to constitute a rather oddly varying percentage of the total. The table will illustrate this point.

Lat. North	Locality	Total Number	Number of Typ.	Number of *fl.*	%
38° 34′	Salt Point, Sonoma County	79	64	15	18.99
37° 12′	Pigeon Point, San Mateo County	548	500	48	8.76
36° 32½′	Mission Point, Monterey County	74	71	3	4.05
36° 27½′	Point Soberanes, Monterey County	70	50	20	28.57

Of special interest are the two southern localities where in similarly sized populations the percentage of the variant is so vastly divergent.

If the series of the variant are closely examined it may be noted that each series contains almost every possible intergrade between the typical *T. brunnea* and the typical variant. This alone may be considered sufficient to relegate the variety *fluctuosa* (Dall) to the synonymy of the typical.

There is a striking similarity between the sculpture of the typical *Tegula aureotincta* (Forbes) and that of the variant. This fact leads the author to the assumption that we are dealing here with a phenomen of parallel evolution, i.e. mutation-trends of similar direction affecting the corresponding genes in closely related species. The only difference is that in *T. aureotincta* this mutation has become the typical character while in *T. brunnea* it still is only a mutation appearing, to be sure, in sometimes large numbers in some populations.

The idea of parallel evolution in the genus *Tegula* is strengthened by the fact that the author found at Salt Point in Sonoma County on May 24, 1955 one living *Tegula pulligo* (Martyn) which shows the sculpture as that described by Dall.

Bibliography:
Dall, William Healey, August 30, 1919.
Proc. United States National Museum, vol. 56, pp. 293-371, page 359.

WHAT IS *HELIX WHITNEYI* NEWCOMB?

Dr. Joseph P. E. Morrison, to be read by Allyn G. Smith

(Abstract)

The status of a small mountain landsnail from the Californian Sierra Nevada, described by Wesley Newcomb in 1864, is discussed with comments on the relationships with other species from similar localities, viz., *"Helix" breweri* Newcomb and *Zonitoides arboreus* (Say). There seems no reason to doubt that *breweri* and *arboreus* are conspecific, a conclusion reached by previous authors.

In 1869, W. G. Binney described and figured as "type" what may be one of the three original specimens of *whitneyi,* which Newcomb declared were different from *breweri.* This specimen (now USNM No. 38876) may be considered the lectotype of *whitneyi.* If all three type specimens collected by Newcomb and once stated to be in the old California State Collection (No. 1112) are lost, as seems possible, this specimen is automatically the neotype of *whitneyi* by declaration of Binney, 1869.

The Lake Tahoe region should be searched for additional specimens that match Binney's 1869 figure of *whitneyi,* which shows the shell only equal to *arboreus* in height, but equalling the larger *nitidus* in diameter. It is likely that two distinct species occur in the area.

DEATH IN A CLAM SHELL;

Mr. Frank W. Moore, Redlands, California

ABALONES AND THE CALIFORNIA DEPARTMENT OF FISH AND GAME;

Mr. Keith Cox, California Department of Fish and Game

MOLLUSCAN PREDATORS AND THEIR PREY;

Andrew Sorenson, John P. Strohbeen, Hazel P. Whelchel, Monterey, California

(Abstract)

Most marine gastropods are carnivorous; *Haliotis* and *Acmaea* are the chief exceptions. The pelecypods feed almost exclusively on plankton and detritus while at the same time they furnish the main food supply of gastropods.

Murex, Polinices and *Oliva* travel deep in the sand; finding a clam they bring it up, effect an opening and consume the unhappy victim. *Polinices lewisii* is blamed for the near-extinction of many bivalves which were once plentiful in Morrow Bay. *Urosalpinx cineria* has done immense damage in the East, is now well in San Francisco Bay.

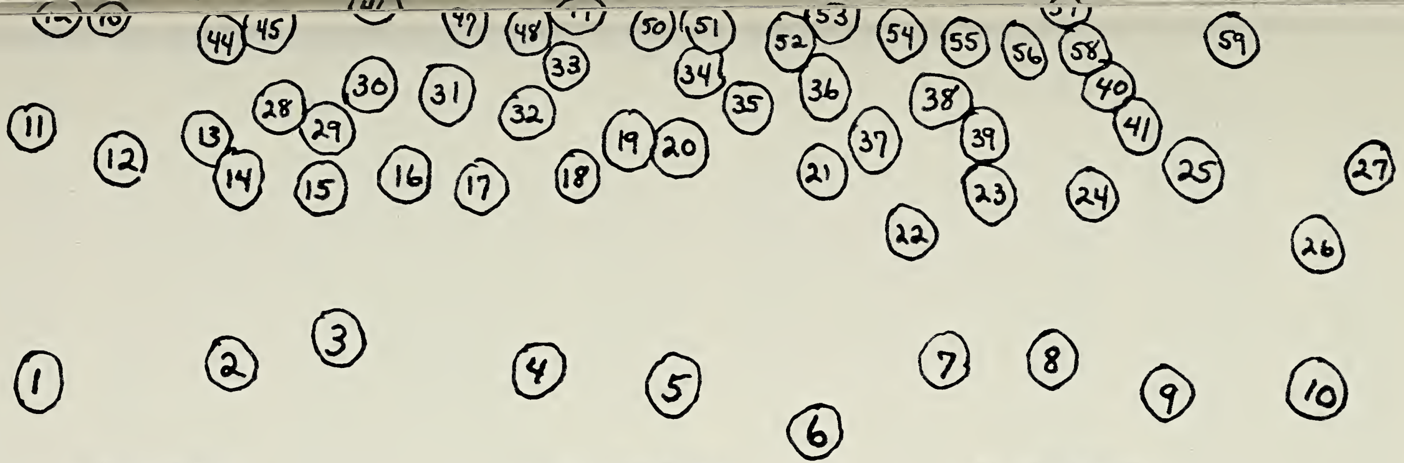
In Mexican bays the chief preditor are the murices; *M. bicolor* and *M. nigritus* are there en masse; once they find a clam, the radula is quickly able to file a long opening; *Murex* never drills, popular opinion notwithstanding.

Oliva is more patient; they neither drill nor file but hold their prey until the animal smothers for lack of oxygen, or has become exhausted from holding the shell closed for a long period; the slightest opening, in goes the radula and the show is over.

Thais emarginata moves about the rocks, eating the eggs of other mollusks; *T. kioskiformi* climbs the mangroves to dine on the small oysters, while below *Fasciolaria princeps* hunts out the *Turbo,* though it will tackle anything its own size.

And finally the greatest preditor of them all: man himself. IT DOESN'T PAY TO KILL THE GOOSE THAT LAYS THE GOLDEN EGG!

DELEGATES ATTENDING EIGHTH ANNUAL MEETING AMUPD



1. Emery Chace
2. Ralph Fox
3. John Strohbeen
4. Roy Ferguson
5. Patrick Milburn
6. George Kanakoff
7. Merton Hinshaw
8. Helmut Meier
9. Clifford Church
10. Crawford Cate
11. Edward Baker
12. Allyn Smith
13. Mary Long
14. Gerald Smith
15. Gilbert Grau
16. Dr. Rudolph Stohler
17. Gladys Archerd
18. Prof. Jens Ostergaard
19. Mrs. Edward Baker
20. Dr. S. Stillman Berry
21. Dr. Albert Mead
22. Mrs. Helmut Meier
23. Mrs. Emma Coats
24. Capt. Margaret Graham
25. Dr. Takashi Ino
26. George Harrington
27. Howard McCully
28. Mrs. Robert Alexander
29. Helen Burton
30. Mrs. Josh Baily
31. Mrs. Florence LaFayette
32. Barry Roth
33. Robert Alexander
34. Dr. Fritz Haas
35. Andrew Sorenson
36. Mrs. John Q. Burch
37. Mrs. Emery Chace
38. Mrs. Crawford Cate
39. Mrs. Louis Mousley
40. Dr. Wendell O. Gregg
41. Jean Wilkins
42. Keith Cox
43. John Q. Burch
44. Paul Steele
45. Alan Kohn
46. Dr. Josh Baily
47. Dr. Leo Hertlein
48. Lucille Zellers
49. Ray Summers
50. Dr. Myra Keen
51. Ruth Coats
52. Mrs. John Strohbeen
53. Louis Mousley
54. Frank Russ
55. Mrs. George Kanakoff
56. Mrs. Hazel Whelchel
57. E. L. Bousfield
58. Robert Talmadge
59. Frank Moore

CONSTITUTION OF
THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the by-laws. Life membership may be purchased for the equivalent of twenty years' annual dues, with no further annual dues required. Honorary membership may be bestowed by an unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.
4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, Publications Editor, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact by-laws that interpret this Constitution, and such by-laws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.

10. The official publication of the Society shall be the Annual Report of the A.M.U. which shall contain accounts of meetings, notices, and a list of active and honorary members.

BY-LAWS

1. The annual dues shall be one dollar.
2. (August 16, 1954) The annual dues shall be two dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.

THE AMERICAN MALACOLOGICAL UNION
EXECUTIVE COUNCIL
1955-1956

☆

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ALBERT WRAY HARRIS

1894-1953

Among navy careerists it is truly said that, if one enlists at an early age, he can begin a second life upon retirement. This truism applies well to the life of Wray Harris, late Marine Malacologist of the Bernice Pauahi Bishop Museum whose doubly useful life, first as a Pharmacist's Mate in the U. S. Navy and later as a scientist came to an all-too-early termination on December 17th, 1953, at the youthful age of 59.

Upon his retirement as Chief Pharmacist's Mate (1939) Wray Harris was appointed Assistant in Malacology by Dr. C. Montague Cooke, Jr. The latter had known Wray since 1925 and was impressed by his ability, knowledge of marine molluscs, and scholarly attitude towards research. Their friendship was strengthened when Wray unselfishly donated to the Bishop Museum a large collection of seashells amassed systematically over a period of three consecutive years in American Samoa.

An anecdote is often related by Dr. Cooke which illustrates the zeal and persistence that characterized the pharmacist-malacologist. On shore leaves Wray would either be collecting seashells or studying at the Museum. One of the studies was a word for word copying of molluscan literature long out of print for his own library. Early in his career Dr. Cooke also copied much of the old literature in longhand and he certainly must have been impressed by the parallelism.

While studying at the Museum Wray learned scientific procedures relating to collecting, cleaning, classifying, and the keeping of data exactly and accurately. As a result, his Samoan collection is noted for precise data.

During his 13 years as Marine Malacologist at the Bishop, Wray arranged and catalogued a large percentage of the million-plus specimens, particularly those of L. A. Thurston and of J. S. Emerson which had awaited incorporation into the general collection since acquisition many years ago. In this period he also compiled an extensive card catalogue of the marine molluscs of the inner Pacific area. However, he was never too occupied to assist students of all ages in naming shells, assisting in their road to learning, wisely counseling them in scores of collecting methods, and advising them on shell literature.

Wray Harris was born in Canada on July 30th, 1894 and served in the U. S. Navy in World War I. He was stationed in Hawaii in 1927, Samoa 1928-30, California thereafter, Samoa again 1934-37, then settled in Hawaii until his retirement in 1939. He married Anna Elizabeth Hoffman in 1931 while living in Vallejo.

While marine malacology was Wray's prime interest, he was also a widely read scholar, historian, geneologist, student of naval strategy, and a good citizen who partook actively in precinct politics. A member of the Mayflower Society, he had one of the most extensive collection of geological books and catalogued notes in the Territory. As a firm believer in seapower—he was a great admirer of Adm. Mahan—he regularly regaled many a lunch hour gathering during World War II with his keen analysis of past naval actions in relation to probable future outcomes.

In 1941 Wray convened a group of shell enthusiasts and founded the Hawaiian Malacological Society of which he was the first president. The club now has over 100 members and has honored the memory of Wray Harris by naming its library for him. This society succeeded the long inactivated Gulick Shell Club.

Organizations in which Wray held active memberships, exclusive of those noted, were: Republican Club, Hawaiian Historical Society, Hawaiian Academy of Sciences, Society of Systematic Zoology, and the American Malacological Union.

YOSHIO KONDO,
Bishop Museum, Honolulu, T. H.

MEMBER CLUBS

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Lucille Zellers, Secretary pro tem: Our club of forty-two members meets at the Oakland Museum on the first Tuesday evening of each month. Present officers: Dr. Rudolph Stohler, President; Marianna Paulson, Vice-President; Phoebe Balch, Secretary-Treasurer; Margaret Oehlman, Corresponding Secretary.

At each meeting a member has told how he or she became a shell collector, while another has brought twenty-five shells properly labeled with name, locality, data, etc. These speakers made up our program for the past year: "Abalone, Tagging and Fisheries," Keith Cox, Department of Fish and Game; "The Comparison of Sub-tidal and Intertidal Environment," Dr. Meridith Jones, University of California; Highlights of a year of travel and collecting in Europe, Africa, the Mediterranean and South America, Miss Helen Burton; "Fauna of the Gulf of California," William K. Emerson, University of California; "The Life Cycle of the Abalone and Abalone Fisheries in Japan," Dr. T. Ino, University of Fisheries, Tokyo; "Collecting on Kapingamorangi Atoll," Dr. Cadet Hand, University of California; Collecting during a year's residence in Hawaii, Mrs. Zetta Cochran; Showing of colored slides of Nudibranchs and Tectibranchs by Vergil Herring; "California Land Snails," Allyn G. Smith. Other club activities included a tour of the Paleontology Department of the University of California conducted by William K. Emerson who then gave a lecture on fossils, and an overnight collecting trip to Bodega Bay, the latter enjoyed by twenty-six members and their guests.

Eleven members attended the 1955 meeting of the AMUPD at Stanford. Several books have been purchased for the club library.

THE HAWAIIAN MALACOLOGICAL SOCIETY, Elizabeth Wilson, Corresponding Secretary: The Society meets the first Wednesday of each month at the Aquarium; visiting shell collectors and other interested persons are cordially invited. Due to Hawaii's location in the middle of the Pacific, and to the ever-changing tourist population, visitors were especially prominent at meetings last year. We closed the year with 115 members and a balance of $176.32 in our treasury.

The November meeting is set aside for the annual installation of officers and a banquet, and the December meeting is a Christmas party to which everyone is expected to bring an acceptable shell, wrapped as a gift but with donor's name omitted. The shells are placed under the tree, and members draw lots to determine the order in which they select their present.

The Society sponsors a collecting tour and outing once each year, generally during the summer months although any month will do, in Hawaii. At other meetings there is a prepared program, usually featuring a subject on which the speaker has done considerable research; planktonic shells, the giant clam, food and feeding habits of the cone shells were especially interesting topics. Such prominent visitors as Dr. Ferdinand C. Lane of Marblehead, Massachusetts (who stopped for several weeks on a globe girdling tour) are frequently asked to speak. Several members of the Society have aqualungs or other under-water diving equipment and the results are an interesting part of the discussion which follows the regular program.

The use of such equipment has revolutionized collecting in this area; shells heretofore considered very rare (*Conus spiceri, Mitra tessalata, Cypraea tessalata, C. scurra,* to name a few) are being found in increasing numbers. Much additional information is being acquired as to habitat and living conditions of these as well as the more common species.

During the past year we established the Wray Harris Memorial Library in memory of the conchologist at the Bishop Museum who was also a charter member of our Society. It is housed in the Aquarium and already has many shell reference books, all donated by members.

In April and again in October the Society held a shell auction, very popular as well as profitable; those shells sold had been donated, but in the future the Society will act as broker and sell shells on commission.

The Society sponsors a monthly mimeographed ten to twelve page paper called the Hawaiian Shell News, devoted to items of interest to collectors not only in Hawaii but anywhere in the world; copies go to Australia, Guam, Ponape, Caroline Islands, and many United States communities, though it is available only to members or by exchange with similar publications of other shell clubs. Check lists of *Conus* and *Cypraea* found in the area of Hawaii are published during the year in this paper; a check list of the genus *Mitra* is now being prepared and will be published shortly. Interest in shells, natural in Hawaii, is furthered by the fact that the two daily newspapers publish a weekly shell column.

Permanent addresses have been established, both for the Society and for the paper. The Hawaiian Malacological Society may be reached by addressing it at 2777 Kalakaua Ave., Honolulu 15, and the address of the Hawaiian Shell News is Box 3751, Honolulu 11. (Hawaii, U.S.A.!)

CONNECTICUT SHELL CLUB, Gertrude W. Thompson, Secretary: The club had a very full schedule in 1955 with but one monthly meeting missed; that of August was cancelled because of hurricane warnings. Twice distinguished guests came down from Harvard: Dr. William Clench gave an illustrated lecture on the mussels of Florida rivers, and Dr. Ruth Turner addressed the club on the teredo or shipworm, a subject on which she is a recognized authority. Early in the summer Dr. Carl Dunbar of Yale spoke on the topic of fossil mollusks, displaying specimens from the museum collection.

At several meetings club members were featured speakers; once we heard from one who had worked in the marine laboratory in Honolulu and at another time a member recently returned from Jamaica told of his trip and of collecting there. Mr. Percy Morris gave a resume of a paper written in 1863 entitled "Mollusks of New Haven," and on another occasion invited the club to the basement of the Peabody Museum, there to view the museum collection, classified according to locality and filed away in innumerable drawers.

A picnic at Milford was held in June, and there was a field trip to Charles Island. New England shores may not yield the colorful shells of tropical beaches, but to a collector that doesn't seem to matter.

At the September meeting the secretary gave an enthusiastic account of the annual meeting of the American Malacological Union which she attended in July at Staten Island, New York.

ST. PETERSBURG SHELL CLUB, Gertrude E. Brakefield, Secretary: Ten meetings were held during the year, all well attended. Talks were illustrated by colored slides or movies and were most interesting while the twice-a-month field trips were enjoyable and instructive. The Shell Show was held March 3rd-9th (1955) at the St. Petersburg Rod and Gun clubhouse and was the highlight of the season. The coveted Smithsonian Institution Award was given to Mrs. James Kelly and son James Jr. for their fine exhibit, self-collected, of Pinellas County, Florida marine shells. Of special interest was their series of *Busycon perversum,* from the egg case and newly hatched shells to a giant sixteen inches long.

Officers for 1955-56: President, A. W. Fahrenbruck; Treasurer, Ernest Klein; Secretary, Gertrude E. Brakefield.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: Regular meetings were held during the year at the Long Beach Public Library, however in the future we will meet at the Y.M.C.A. since the library is to be closed on Sundays. Officers elected to serve during 1955 were: President, Mrs. Eugene Wilkins; Vice-President and Program Chairman, Mr. Charles Bullock; Secretary-Treasurer, Mr. Ralph Bormann; Librarian, Mrs. Ned Baker; Historian, Mrs. Ralph Bormann.

The annual picnic was held at the home of our president at Downey; Dr. Howard R. Hill spoke on Venus clams, after which a shell auction was held, the proceeds going to bolster the treasury.

In September the meeting was held at the home of Miss Julia Ellen Rogers; the club had made an exchange of shells with a man in England who had sent both shells and literature which was most interesting.

The club booklet "Shells and Shell Collecting" has been reprinted, and a most useful directory has been compiled.

THE PHILADELPHIA SHELL CLUB, Virginia Orr, Secretary-Treasurer: The charter meeting of the Philadelphia Shell Club was held on September 22, 1955 at the Academy of Natural Sciences of Philadelphia where meetings will be held at 8 P.M. on the third Thursday of each month. A set of by-laws was adopted, the charter signed by forty-four members, and the following officers elected for the coming year:

Honorary Life President	Dr. Henry A. Pilsbry
President	Dr. R. Tucker Abbott
Vice-President	Dr. Charles B. Wurtz
Historian	Mr. John D. Parker
Secretary-Treasurer	Miss Virginia Orr
Councillor-at-large	Miss Anne Harbison

At the second meeting on October 20, there were 60 members. Member George F. Kline gave a talk on "The First Cruise of the *Gloria Maris,*" an account of last summer's expedition to the Palau Islands in search of marine mollusks. The Club plans to invite out-of-town speakers for some of the future meetings.

BOSTON MALACOLOGICAL CLUB, Mrs. Margaret F. Carlson, Secretary: The club met on the first Tuesday of each month, October through May, 1955 in the Massachusetts Audubon Society Library. The following program was enjoyed:

Report of summer activities of members: "Collecting Marine Mollusks in New England," Mr. Arthur H. Clarke, Jr.; "Adventures in Clamming," Dr. Henry D. Russell; "Freshwater Mollusks of Northern Florida," Dr. Ruth D. Turner and Dr. William J. Clench; "Some Expeditions to the South Seas," Mr. Yoshio Kondo; "A Study on the Biological Control of Medical Mollusks," Mr. Edward Michelson; "Collecting in the Ucayali River of Peru," Dr. Bernard Kummel; Humble Oil Company movie of the Limestone Reefs of the Bahamas. The club outing was held in June at Old Silver Beach, Falmouth, Massachusetts.

The following officers were elected for 1954-55: President, Mr. Herbert D. Athearn; Vice-President, Mr. Arthur H. Clarke, Jr.; Secretary-Treasurer, Mrs. Margaret F. Carlson; Conchological Recorder, Dr. Joseph C. Bequaert; Executive Committee, Dr. William J. Clench, Mr. Edward Michelson.

THE GREATER ST. LOUIS SHELL CLUB, Mrs. Winta Barber, Secretary: Our club meets on the first Tuesday of each month. At these meetings it is our custom to study one family, pooling shells from members' collections for comparison and reference. Of much aid are mimeographed charts listing as completely as possible all species of the group under consideration; these charts are cross-indexed with reference to the books owned by our members and the mention or description of the shell therein. Another chart lists the species of a family together with their synonyms.

Our club is one of the few in an inland locality, yet we feel that the collections owned by our members are as good as may be found anywhere outside the museums, and we proudly invite anyone passing through our city to stop off and get acquainted.

During the past year several of our members have made collecting and sightseeing trips to Florida, to Havana and to the museum of the Academy of Natural Sciences at Philadelphia.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, D. L. Burford, Secretary: The membership of the club has remained constant this year, with about sixty paid members. Meetings are held the first Tuesday of each month at the Los Angeles County Museum. The following officers were elected for 1955: President, Mr. John Fitch; Vice-President, Dr. N. T. Mattox; Secretary, Mr. D. L. Burford; Treasurer, Mrs. Brooks.

Besides these scheduled programs, there have been reports on collecting, changes in nomenclature and new publications: "Skin-diving and Underwater Photography," by Mr. Volmer Jensen; "A Trip to the Marshall Islands," by Mr. John Fitch; "A Cruise to Port-of-Spain, Trinidad, on the Valero III," by Dr. N. T. Mattox; "A Tour of New Zealand," by Dr. Hurley, New Zealand government biologist; "The Muricidae," by Mr. John Q. Burch; "A Report on a Thirty-five Day Trip to the Gulf of California with the California Department of Fish and Game," by Mr. D. L. Burford; "A Review of Past Work on the Japanese Species of *Haliotis,*" by Dr. Takashi Ino of the Tokai Regional Fisheries Laboratory, Tokyo, Japan; "A Field Trip to Sicorro and Clarion Islands, Mexico," by Mr. John Fitch; "An Explanation of Up-welling, Causes and Effects," by Mr. John Fitch; "A Review of the Papers Presented at the AMUPD Meeting at Stanford University," by members who attended this session; "A Report on the Breeding of Squid at La Jolla, California, During 1955," by Mr. Conrad Limbaugh.

As in past years, Mr. John Q. Burch edited and published "The Minutes of the Conchological Club of Southern California," a scientific contribution most important to all concerned with conchology.

NEW YORK SHELL CLUB, Edward F. Cowles, Jr., Recording Secretary: This organization, which celebrates the seventh anniversary of its founding in February, 1956, is still growing healthily. One or two new members join us at almost every meeting. We meet at the American Museum of Natural History, generally on the last Sunday from September to November, omitting December, and the first Sunday from January to May. Visitors are cordially welcomed.

Our members' ages cover a wide range, and so do their interests, as illustrated by the titles of the papers presented at one meeting of this past season: "Some Cuban Subgenera of *Urocoptis,*" Mr. Morris K. Jacobson; "Molluscocides," Mr. Michael Krassner; "Generic Names in the Family Conidae," Mr. Anthony D'Attilio; "Some Uses of Shells," Mr. Neil Petersen (our youngest member).

The monthly "Notes," edited by Mr. Jacobson, includes abstracts of the papers given at the meetings and in addition articles contributed by members, notably a series on New York representatives of various molluscan families, by the editor, and another by Mr. D'Attilio illustrating and describing some rare shells from his collection.

A highlight of the Club's year was the talk by Dr. Joseph P. E. Morrison of the U. S. National Museum, who showed us beautiful color movies he took at Raroia Atoll and elsewhere in the Pacific. Other noteworthy events were the naming of *Macroceramus loeryi* Jacobson for our fellow-member who collected it in Puerto Rico last fall, and the auction of member-donated books and shells, which boosted the treasury handsomely.

Our officers for 1955 have been: President, Mr. Anthony D'Attilio; Vice-President and Treasurer, Miss Mathilde Weingartner; Corresponding Secretary, Mrs. Bernard Wichern; Recording Secretary, Mr. Edward F. Cowles, Jr.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Catherine Bradley, Secretary: The Buffalo Club is a small but very active group. We meet in the Buffalo Museum of Science during the winter months where we have access to the study collection of the museum to illustrate the papers that are read at meetings. During the summer our program is varied by visits to the homes of members, picnics and field trips. Our annual business meeting in January customarily follows a banquet at one of Buffalo's fine restaurants. One of our most interesting meetings this year was an illustrated lecture by Clifford Awald on Fluorescence in Minerals and Shells.

For a small group we seem unusually travel conscious. Our members bring back to us fine accounts, beautifully illustrated with movies or Kodacrome slides of their experiences which this year included trips to Florida, the West Indies, Trinidad, Panama, Bermuda, Germany, and of course, the American Malacological Union meeting at Staten Island which four of us attended. Every member contributes some bit of shell lore from his reading or travels at the Observation Poll with which each meeting begins.

We cordially invite any out-of-town visitors to join our group which meets at the museum the third Friday of the month. Officers elected this year are: President, Mrs. Annie Hoffman; Vice-President, Miss Gertrude Weber; Secretary, Mrs. Catherine Bradley; Treasurer, Miss Louise Becker.

PACIFIC SHELL CLUB, Crawford N. Cate, President: We meet on the third Sunday of each month, October through May, in the Los Angeles County Museum. Now in its twelfth year, the Pacific Shell Club is open to all who are interested in shell collecting, adults and children alike. At each meeting, fine shells are given as door prizes, and in addition, many duplicates are generously donated for general distribution among the members.

Officers for the year 1954-55 were as follows: President, Mr. Crawford N. Cate; Vice-President, Mr. Milton W. Zim; Treasurer, Mr. Isaac R. Cowgill; Secretary, Miss Florence Thurlow; Museum Sponsor, Dr. Howard R. Hill.

We started the year with 128 active members. Programs for the year were devoted to shell terminology, taxonomy, and ecology, and were illustrated by color slides and chalk drawings. The programs for the most part were prepared by members of the club, with the exception of a fine illustrated talk by Mr. John Fitch of the California Department of Fish and Game, describing his collecting experiences in the Marshall Islands. The junior members of the club presented interesting papers on the lives of famous conchologists. *The Proceedings of the Pacific Shell Club, 1955,* a twenty-two page mimeographed paper, has been prepared as a reference work on the topics studied during the year.

The incoming officers for the year 1955-56 are as follows: President, Mr. Milton W. Zim; Vice-President, Mr. Ralph Hall; Treasurer, Mr. Isaac Cowgill; Secretary, Miss Florence Thurlow; Museum Sponsor, Dr. Howard R. Hill. The coming year promises to be an outstanding one. Plans include a field trip in November to Cabrillo Beach, two slide-illustrated travel talks on trips into different parts of Mexico by the incoming President, Mr. Zim; a film on Tide Pool Life, and many other interesting programs.

The Pacific Shell Club cordially extends to all AMU members and their families and friends an invitation to visit our meetings whenever possible.

ACTIVE MEMBERS

[Membership List Revised December 31, 1955]

Aarnes, Henry, 4543 Milwaukee St., Denver 16, Colo. General Interest.
Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.
Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.
Ahern, Mrs. Thomas, 8747 Brandt, Detroit 4, Mich.
Akers, Mrs. Frank G., Box 133, Naples, Florida.
Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.
Alexander, Mrs. Robert, 4759 Valencia Dr., San Diego 15, Calif.
Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.
Allen, Dr. J. Frances, Dept. of Zool., Univ. of Maryland, College Park, Md.
Allen, Miss Letha S., 1348 Dartmouth Ave., Baltimore 14, Md. General.
Althaus, Kenneth, 319 E. 110th St., Los Angeles 61. No. Am. Unionidae.
Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.
Anderson, Col. A. S., 504 Carroll St., Dothan, Ala. Worldwide shells.
Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.
Arias, Sergio, Sociedad de Ciencias Naturales La Salle, Apartado 681, Caracas, Venezuela. All mollusks of neotropical regions.
Armstrong, Mrs. Eliot, 681 Lafayette Ave., Buffalo 22, N. Y. Collecting.
Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y
Athearn, Herbert D., 240 14th, NW, Cleveland, Tenn. Freshwater mollusks.
Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. Land shells.
Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.
Averre, Mrs. Wm. V., Apt. Postal 110, Limon, Costa Rica.
Awald, Clifford J.,162 Southwood Dr., Kenmore, N. Y.
Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Bailey, Prof. John Wendell, 27 Willway Rd., Richmond 26, Va.
Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.
Baker, E. P., 11619 Downey Ave., Downey, Calif. Exch. Pacific Coast shells.
Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.
Balch, **Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.**
Bales, Mrs. Blenn R., 149 West Main St., Circleville, O.
Ballard, Wm. Lewis, 458 Shannon Dr., S.W., Atlanta, Ga.
Bartlett, Mrs. R. D.. 200 Cedar Croft Rd., Baltimore 12, Md. E. coast shells Md. to Fla.
Bartsch, Dr. Paul, Smithsonian Institution, U. S. National Museum, Washington 25, D.C. Residence, "Lebanon," Gunston Hall Rd., Lorton, Va.
Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. Exchange.
Bayer, Frederick M.. Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.
Beatty, George D., R. 1, Sandusky, O. Land and f.w. mollusks of Great Lakes region.
Beck, Mrs. R. G., 422 So. Vine St., Escondido, Cal.
Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Bengston, Mrs. George, 816 Colleen Ave., Waterloo, Iowa. Land, f.w., fossils.
Bequaert, Dr. Joseph C., Museum of Comparative Zoology, Cambridge 38, Mass.
Berg, Dr. Clifford O., Dept. of Entomology, Cornell Univ., Ithaca, N. Y.
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Billard, Ruth S., Rowayton, Conn.
Bippus, Alvin C., Jr., 1918 Bayard Pl., Toledo 6, O. Col. Marine univalves.

Bixby, Mrs. H. M., Look See, Captiva, Florida.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Mrs. Margaret Carlson, 399 Washington St., Woburn, Mass.
Bourgeois, Miss Marie E., 3a Tiziano 35, Mixcoac D. F., Mexico.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Brewster, Miss Helen, 333 5th St., So., St. Petersburg 5, Fla.,
Brill, Mr. and Mrs. J. A., 2801 Guilford Lane, Oklahoma City 16, Okla.
Broekel, Ray, 1051 Grove St., Jacksonville, Ill. General interest.
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Bronson, Albert B., P.O. Box 667, Agana, Guam, M. I.
Brooks, James C., Jr., 194 Riley Ave., Macon, Ga. Atlantic and Caribbean gastropods.
Brown, E. V., Brownie's Sun and Sand Club, Sanibel, Fla.
Brown, J. J., 502 E. 42nd St., Austin, Texas.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Burch, John Bayard, Div. of Mollusks, U. of Mich., Ann Arbor, Mich.
Burch, Mr. and Mrs. John Q., 1584 W. Vernon Ave., Los Angeles 62, Cal.
Burch, Dr. Paul R., Rockville, Virginia.
Burford, D. L., 4241 Jackson Ave., Culver City, Calif. *Haliotis.*
Burke, Mrs. Frank P., 2121 So. Simpson St., Philadelphia 42, Pa. School collections.
Burke, Fred, Branch, Mich. Trade and sell shells.
Burrow, Mrs. F. H., 1401 Plass Ave., Topeka, Kansas.
Burry, Mrs. Leo A., Burry's Marine Museum, Rt. 1, Box 544, Pompano Beach, Fla.
Burton, Helen A., 391 Adams St., Oakland 10, Cal.

Cahoon, Ruth Mary, 1173 Gulfstream Ave., Sarasota, Fla. Exchange, collect.
Caribbean Shell Shop, P.O. Box 311, Sarasota, Fla. Commercial and specimen shells.
Carlson, Mrs. Margaret F., 399 Washington St., Woburn, Mass.
Carpenter, Capt. Walter N., 357th M. I. Det., APO 29, New York. General interest.
Casey, Mrs. Robt. V., 2136 Briargate, Kirkwood 22, Mo. Florida west coast shells.
Cashman, Marjean, 7 No. Beechwood Ave., Catonsville, Md.
Castellanos, Dr. Jose R., Virtudes 258, Dep. 110, Habana, Cuba. Marine mollusks.
Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Blvd., Los Angeles 49, Calfi. *Cypraea, voluta,* Japanese shells.
Chace, Mr. and Mrs. E. P., 24205 Eshelman Ave., Lomita, Cal.
Chamberlain, J. Lockwood, Biological Lab., Harvard University, Cambridge 38, Mass.
Champion, Dr. Merrill E., 9 Salem St., Wakefield, Mass.
Chandler, Mrs. Doris M., P.O. Box 621, Chatham, Mass.
Cheever, Dr. Austin W., 464 Beacon St., Boston 15, Mass.
Chen, Siu-fong, 4529 Middleton Lane, Bethesda 14, Md.
Chenoweth, Paul N., 4870 E. 39th St., Seattle 5, Wash. Marine invert. in natural habitat.
Chestnut, Dr. A. F., Inst. of Fisheries Research, Morehead City, N. C. Ecology of economic mollusks, taxonomy of pelecypods.
Chicoine, Martin J., 2013 New Hampshire Ave., NW, Washington 9, D. C.
Church, Austin, 140 St. Joseph Ave., P. O. Drawer "C", Trenton, Mich.
Ciarla, Otello, Rua Laurinda Santos Lobo, 311 Santa Theresa, Rio de Janeiro, Brazil.
Claar, Elmer A., 1400 Lake Shore Dr., Chicago 10, Ill. *Cypraea.*
Clarke, Arthur H. Jr., 19 Theurer Park, Watertown, Mass. Sphaeridae; New England Marines.

Clarke, Dr. Rosemary, P. O. Box 221, DeLand, Fla.
Clench, Dr. William J., Museum of Comp. Zool., Cambridge 38, Mass. Collect, exchange, buy.
Coats, Miss Ruth E., 3846 Skyline Rd., Route 1, Carlsbad, Cal. Collect, exchange fresh water mollusks.
Cockerill, Mrs. Lilias F., Sanibel, Fla.
Colden, William W., 5101 Ave. K, Brooklyn 34, N. Y. Pectinidae.
Coles, Mrs. Mary J., 801 American Trust Bldg., Nashville, Tenn.
Conchological Club of So. Calif., c/o E. P. Baker, 11619 Downey Ave., Downey, Calif.
Conchological Section, Buffalo Society of Natural Sciences, c/o Mrs. Catherine Bradley, Eden, N. Y.
Conkin, James, P.O. Box 711, Union Producing Co., Beeville, Texas.
Conkling, Joseph E., Box 264, Edgartown, Mass. Winter, 628 4th Ave., S., St. Petersburg, Fla. Collect, buy, exchange.
Connecticut Shell Club, Peabody Museum, New Haven, Conn.
Corbett, William Phelps, 185 Grove St., Plainfield, N. J. Exch. rare *Cypraea, Murex* and *Oliva.*
Corwin, Warren, Royal Palm Hammock, P.O. Goodland, Fla. Buy and sell shells.
Cowles, Edward F., Jr., 12 Hillcrest Ave., New Rochelle, N. Y. Tropical marine shells; photography.
Craine, Mr. and Mrs. Z. W., 155 N. Broad St., Norwich, N. Y. Marines.
Cram, Dr. Eloise B., Federal Security Agency, U. S. Public Health Service, National Inst. of Health, Bethesda, Md.
Crant, Harold, The Shell Factory, P.O. Box 1231, Ft. Myers, Fla.
Crum, Mrs. Dan, 2196 Warren Rd., Laakwood 7, Ohio. *Conus; voluta.*
Cumming, James A., Sunset Dr., Grand Island, N. Y.
Cumming, Mrs. James A., Sr., Sunset Dr., Grand Island, N. Y.

Darling, F. Murray, RFD No. 2, New Bedford, Mass. Marine life in general.
D'Attilio, Anthony, 44 Lynwood Dr., Valley Stream, Long Is., N. Y.
Davis, Allan W., P. O. Box 63, Gulf Breeze, Fla. Dealer; private collection.
Davis, Dorothy, Naples Shell Shop, 541 8th St., So., Naples, Fla.
Dawley, Dr. Charlotte, The Women's College, University of N. C., Greensboro, N. C.
DeLuca, Miss Gladys, 16 Oakland Ave., Wollaston 70, Mass.
DeLuca, Mrs. John A., 16 Oakland Ave., Wollaston 70, Mass.
Derr, Mr. and Mrs. John S., Jr., Dearbought, Rt. 1, Frederick, Md.
Desmond, Hon. Thomas C., P. O. 670, Newburgh, N. Y.
DeWitt, Robt. M., Biol. Dept., Univ. of Fla., Gainsville, Fla.
Dexter, Dr. Ralph W., Dept. of Biology, Kent State Univ., P. O. Box 507, Kent, Ohio.
Dodge, Henry, 6 Rochambeau Rd., Scarsdale, N. Y.
Donovan, James W., 3718 Calvin Ave., West Palm Beach, Fla.
Dorasavage, W. C., M.D., 700 Mahantonga St., Pottsville, Pa.
Douglas, Inc., 5 Via Parigi, Palm Beach, Fla. Worldwide shells.
Drake, Robt. J., 3028 N. Oracle Rd., Tucson, Ariz.
Dranga, Anna and Ted, 1260 SW 1st St., Miami 35, Fla.
Dundee, Dee, Museum of Zool., U. of Mich., Ann Arbor, Mich. f.w. mussels.
Dunlav, Edward, Shell Art Novelty Co., 229 So. 9th St., Philadelphia 7, Pa. Sell; buy; exchange.
Dunmire, Miss Peggy, 1116 W. 4th St., Port Angeles, Wash. Shell coll.

Eaton, Miss Ruth E., 3333 Orange St., Riverside, Cal.
Edwards, Chas. S., Gen. Del., Nakomis, Florida. Fla. w.c. shells.
Eggleston, Dr. Harla Ray, Chairman, Dept. of Biol., Marietta College, Marietta, Ohio.
Ehler, Merrill W., 338 Ivy St., Wallingford, Conn.

Emerson, Wm. K., American Museum of Natural History, New York 24, N. Y.
Emery, Adele K., Box 1265, South Miami, Florida. Fla. E. coast marines.
Entwisle, Mrs. H. F., 11 Dale Ave., Pompton Plains, N. J.
Erickson, Carl W., 4 Windsor Ave., Auburn Mass.
Eyerdam, Walter J., 7531 19th Ave. N.E., Seattle 5, Wash.

Falconer, Bessie, 236½ Bailey St., Los Angeles 33, Cal.
Fargo, William G., 506 Union St., Jackson, Mich. Dec. to May, P. O. Box 874, Pass-a-Grille, Fla. Tertiary mollusca.
Fitch, John E., Calif. State Fish. Lab., Terminal Island, San Pedro, Cal.
Finley, Mrs. Ruth C., 4517 B St., Sacramento, Cal. *Conus;* exchange.
Finlay, C. John, Varadero Beach, Cuba. West Indian marine shells.
Fletcher, Mr. and Mrs. Howard L., 1008 La Hermosa Dr., Redlands, Cal. Murex, Olividae, Calliostoma.
Flipse, Dr. and Mrs. Robt. C., 80-56 Surrey Pl., Jamaica 3, N. Y.
Flowers, Mrs. Edmay V., R.F.D. No. 2 Kirkwood, Gainesville, Florida.
Forbes, Mrs. F. Murray III, 21 Beaver Pl., Boston 8, Mass. General collecting.
Foster, Mrs. Fred H., Oxford, Ind. Shells in general.
Foster, Richard Winslow, Museum of Comp. Zool., Cambridge, Mass.
Fowler, Miss Verna A., 616 S. Sante Fe St., Salina, Kansas.
Fox, Ralph Olen, 1048 Monterey Ave., Berkeley 7, Cal.
Frampton, Mr. and Mrs. Henry G., Box 1052, Miami 6, Fla.
Franzen, Dr. Dorothea, Illinois Wesleyan Univ., Bloomington, Ill.
Freeman, Mr. and Mrs. Harley L., 353 S. Atlantic Ave., Ormond Beach, Fla.

Gardner, Mrs. Fred, R. D., Jamesville, N. Y.
Gardner, Dr. Julia, U. S. Geological Survey, Washington, D. C.
Gaylord, Prof. Joseph S., 203 So. State St. Bloomington, Ill.
Geesaman, Marion C., R. D. No. 1, Newark, Delaware. Gastropods.
Getz, Miss Dorothy, Apt. 5, 763 Coast Blvd., So., Laguna Beach, Calif.
Gillham, Bert A., Rockford, Iowa. Exch. local land and fresh water shells.
Glude, John B., Boothbay Harbor, Me. Biological Investigation of *Mya* and *Venus.*
Gordon, Mackenzie, Jr., U. S. Geol. Survey, Washington 25, D. C. West Am. mollusca.
Gould, Russell, 608 Cumberland Ave., Syracuse, N. Y.
Grabie, Mrs. A. J., Box 611, Amityville, N. Y. Coll. and exch. Florida shells.
Graham, Capt. Margaret, U.S.A.H., Ft. Ord, Calif.
Grant, Dr. U. S., 4th, 121 Groverton Place, Los Angeles 24, Calif.
Grau, Gilbert C., 2457 Claremont Ave., Los Angeles 37, Cal.
Greater St. Louis Shell Club, c/o Mrs. Winton Barker, 966 Wood Ave., Kirkwood 22, Mo.
Greathouse, Mrs. W. J., 300 Vaden Rd., Poplar Bluff, Mo. Panama shells.
Greene, Karl W., Box 3751, Honolulu, Hawaii. *Conus.*
Gregg, Wendell O., M. D., 2200 S. Harvard Blvd., Los Angeles 18, Cal. Coll. and exch. mollusca of Western N. A.
Griffith, Mrs. Lela M., Egmont, B.C., Canada. B.C. Marine shells; *Conus* and *Cypraea.*

Haas, Dr. Fritz, Chicago Natural History Museum, Chicago, Ill.
Hackney, Mrs. Gray, 705 Redgate Ave., Apt. 14, Norfolk, Va.
Hadley, Mr. and Mrs. F. K., Box 33, West Newton, 65, Mass.
Haid, Mrs. Lloyd Orr, 723 Club Lane, St. Louis, Mo. *Conus; Voluta; Oliva.*
Hall, Miss Bernice, Alden, Minn. Collect and exchange.
Hall, Henry Martyn Jr., 502 Lloyd St., Pittsburgh 8, Pa.
Hall, Joseph M., P. O. Box 1312, Sarasota, Fla. Museum of Florida shells.
Hall, Mrs. Patrick H., 23 Buckeye Dr., Ferguson Hills 21, St. Louis, Mo.
Halupowski, Paul, 58 Cottage St., Lynn, Mass.

Hand, Dr. Cadet, Zool. Dept., Univ. of Cal., Berkeley 4, California.
Hanna, Dr. G. Dallas, California Academy of Science, San Francisco, Cal.
Hanna, Z. D., 2811 N. Alta St., Los Angeles 31, Cal. World shells.
Harbison, Miss Anne, The Barclay, Rittenhouse Square, Philadelphia 3, Pa.
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Stevenson, A. G., 32 Pentland Ave., Mt. Eden, Auckland, S-2, N. Z. Exchange shells and publications.

Stratton, L. W., School House, Delrow, Watford, Herts, England.

Wrigley, Rev. G. K., Hackness Vicarage, Scarsborough, England.

HONORARY LIFE MEMBERS

Dr. Paul Barstch, Dr. S. Stillman Berry, Dr. Henry A. Pilsbry.

IN MEMORIAM

WRAY HARRIS

FRANK P. BURKE

E. O. HOUGHTON

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Moll.

25th ANNIVERSARY ISSUE

The American Malacological Union

FOUNDED 1931

The American Malacological Union, Pacific Div.

FOUNDED 1948

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ANNUAL REPORTS 1956
22nd MEETING, A. M. U.
9th MEETING, A. M. U., P. D.
(COMBINED MEETING)

Membership List Revised. December 31, 1956

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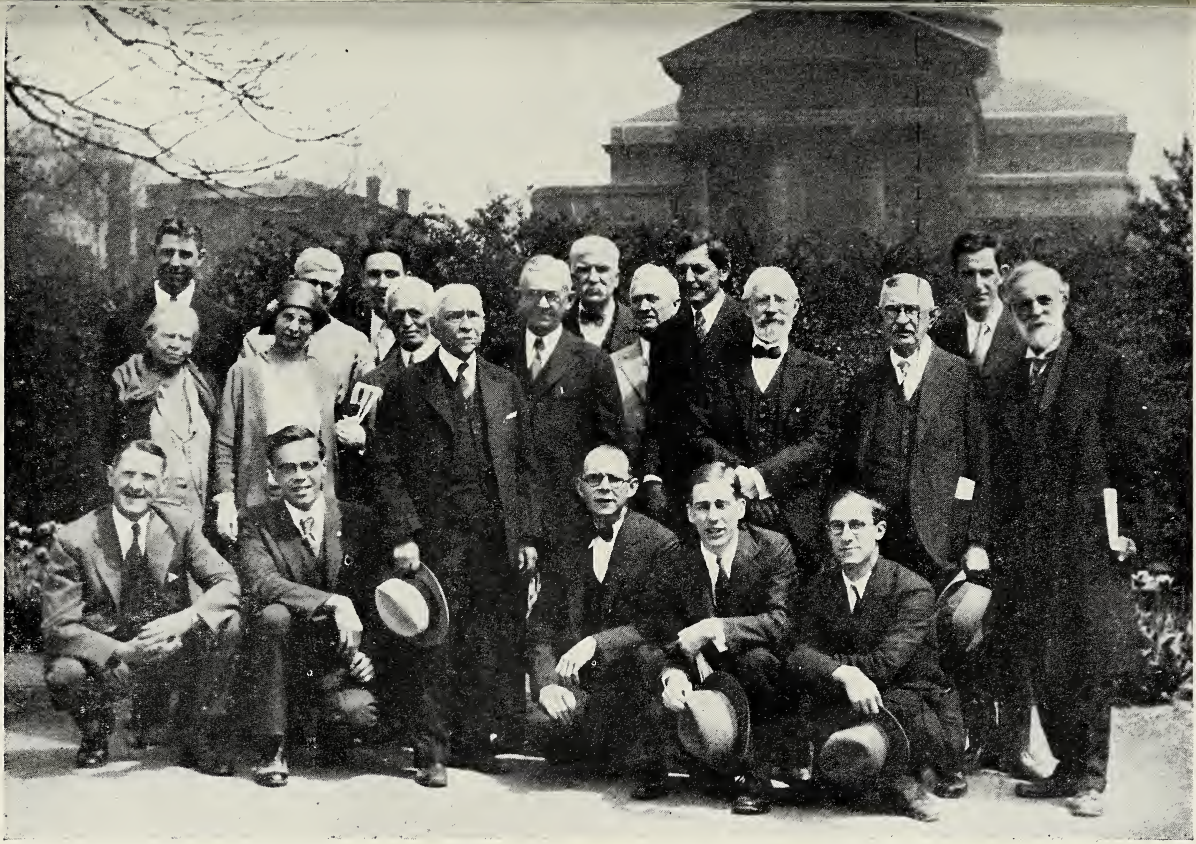
Bulletin number 23, December 31, 1956. Issued annually by the American Malacological Union. Office of Publication, Buffalo Museum of Science, Buffalo, New York.

ABALONE

Alien it is to the eyes of men,
This shell which silvers,
Unsilvers again.
Turns tawny red, blue,
Unshadows with rose;
Tinct greenish, red-gold,
Then silver it glows!
Flames grey in grey flame,
Flares blue, then bronze-white,
Unspeakable glory
Reflecting the light.
Shakes fire from its lip,
Uncolors, pales dim;
Flashes as blood
So bright on the rim!
Pearls white, a dead white,
Gains clouds as from skies,
Pools of bright color
As when the sun dies.
Then silver with bronze
And silver alone,
White as is moonlight,
Strange as is moonstone.
Colors so cool
Colors so warm
Suggesting texture, and fragrance, and form!

—*Evelyn M. Watson*



A PART OF THE GROUP PRESENT AT THE ORGANIZATION MEETING (1931)

Front row: Harold R. Robertson, Allen F. Archer, William J. Clench, Harald A. Rehder, Horace G. Richards. Back row: Ida S. Oldroyd, Fred Tobleman, Imogene C. Robertson, Calvin Goodrich, David T. Jones, John E. Andrews, Henry A. Pilsbry, Walter F. Webb, J. W. Jones, Junius Henderson, Paul Bartsch, William B. Marshall, T. H. Aldrich, E. Sidney Marks, Norman W. Lermond.

THE ANNUAL REPORTS OF THE AMERICAN MALACOLOGICAL UNION

On April 30th of this year (1956) the American Malacological Union became twenty-five years of age. Over this period of time the reports sent annually to members have served as an accurate and detailed history of the organization and in many public and private libraries they are being preserved for just that purpose. However, in date of issue and composition they were far from uniform and persons desiring to quote a reference have experienced difficulty in indicating the issue to which they wish to refer. Therefore it appears that a listing of these publications in their chronological order may serve a useful purpose.

A list of 169 charter members appeared in an eight-page booklet entitled "*Charter Members of the Choncological Society of America* (issued March 21st, 1931)" and according to preserved correspondence was sent to those persons who had signified their intent to affiliate by sending a fee of twenty-five cents to the organizer and first secretary, Mr. Norman W. Lermond. Thirty-five charter members remain on the membership list in 1956.

The group photograph on the opposite page appeared in Report Bulletin Number One together with the newly adopted Constitution, the first Council and a membership list of 143 names. Not all of the charter members were listed, but the omitted names appeared on a one-sheet supplement dated July 1, 1932 together with others who became members during or immediately following the organization meeting. This supplement added 63 active members, 2 honorary and 2 corresponding members. A detailed report of the organization meeting of April 30, 1931 appeared in *Nautilus,* vol. XLV, no. 1, pp. 1-5.

Report number two was mimeographed on letter sheets and it is not certain that it was sent to every member. On the following year (1933) no report was issued other than that which appeared in *Nautilus,* vol. XLVII, no. 1, pp. 37-44. Since that year a report has been published annually in booklet form and sent to all members with the exception of 1942 when no report was published and 1944 and 1945 which were covered in a single issue. Annual meetings were suspended during the war years of 1942, 1943, 1944 and 1945.

A portion of the 1941 meeting was given over to reports on various methods of collecting mollusks; when these papers were compiled in the report bulletin of that year it proved to be so popular that although many additional copies had been printed by 1950 the supply was exhausted. The demand continued and in 1955 these papers were reprinted together with many others in the publication "How to Collect Shells."

The growth and progress of the American Malacological Union may be traced through the years by the facts charted on the following pages. No sudden mushroom growth is indicated, rather a steadily mounting number of names appears on the membership lists with more pages being required each year to report on the activities of the Union, its Pacific Division and its Member Clubs. On a firm foundation of twenty-five successful years the A.M.U. begins the second quarter-century securely established in its recognized place in the scientific world.

ANNUAL REPORT BULLETINS OF THE AMERICAN MALACOLOGICAL UNION

Number	*Year*	*COVER CAPTION*	*Pages*	*Members*	*PLACE AND DATE OF ANNUAL MEETING*	*President*
1	1931	Members of the American Malacological Union—April 1, 1932.	7	143	(Organization meeting.) Academy of Natural Sciences, Philadelphia; April 30 - May 2, 1931.	Henry A. Pilsbry, Chairman
2	1932	Mrs. Imogene C. Robertson's Rambling Notes on the Second Annual Meeting—May 26-28, 1932.	11 (mimeographed)	....	U. S. National Museum, Washington, D. C.; May 26-28, 1932.	Henry A. Pilsbry
......	1933	No bulletin issued. Report appeared in *Nautilus*, July, 1933 — (Vol. XLVII, No. 1, pp. 37-44).	....	....	Museum of Comparative Zoology, Cambridge, Mass.; May 25-27, 1933.	Paul Bartsch
3	1934	Report — Fourth Annual Meeting and Membership, the American Malacological Union—August 1, 1934.	12	215	Stanford University, Stanford, Calif.; June 25-28, 1934.	Junius Henderson
4	1935	Report — Fifth Annual Meeting and Membership, the American Malacological Union—June 27-29, 1935.	8	185	Buffalo Museum of Science, Buffalo, N. Y.; June 27-29, 1935.	William J. Clench Goodrich, V.P., Chair.
5	1936	The American Malacological Union, Sixth Annual Meeting, St. Petersburg, Florida. Membership list revised Sept. 1, 1936.	10	189	St. Petersburg, Florida; April 21-24, 1936.	Calvin Goodrich
6	1937	American Malacological Union, Seventh Annual Meeting, Ann Arbor, Michigan. Membership list revised Jan. 1, 1938.	16	183	University of Michigan Museum, Ann Arbor, Michigan; August 3-5, 1937.	Joshua L. Baily, Jr.
7	1938	The American Malacological Union, Eighth Annual Meeting, Havana, Cuba. Membership list revised Jan. 1, 1939.	22	198	University of Havana, Havana, Cuba; August 1-6, 1938.	Carlos del a Torre
8	1939	The American Malacological Union, Ninth Annual Meeting, Toronto, Ontario. Membership list revised Nov, 1939.	16	218	Royal Ontario Museum of Zoology, Toronto, Ontario, Canada; June 20-23, 1939.	Maxwell Smith
9	1940	The American Malacological Union, Tenth Annual Meeting, Philadelphia, Pa. Membership list revised Dec., 1940.	18	239	Academy of Natural Sciences, Philadelphia; June 17-21, 1940.	Horace B. Baker
10	1941	The American Malacological Union, Eleventh Annual Meeting, Rockland, Maine. Membership list revised Jan., 1942.	44	257	Rockland and Thomaston, Maine; Aug. 26-29, 1941.	Harald A. Rehder
11	1943	The American Malacological Union News Bulletin and Annual Report 1943. Membership list revised Jan., 1944.	24	242	No Annual Meeting.	Louise M. Perry

Number	Year	COVER CAPTION	Pages	Members	PLACE AND DATE OF ANNUAL MEETING	President
12	1944-45	The American Malacological Union News Bulletin and Annual Report, 1944-45. Membership list revised Oct., 1945.	21	261	No Annual Meeting.	Louise M. Perry
13	1946	The American Malacological Union News Bulletin and Annual Report, 1946. Membership list revised April, 1947.	21	308	U. S. National Museum, Washington, D. C.; August 14-16, 1946.	Henry van der Schalie
14	1947	The American Malacological Union News Bulletin and Annual Report, 1947. Membership list revised Dec., 1947.	32	340	Pacific Grove, California; June 18-21, 1947.	Henry van der Schalie
15	1948	The American Malacogical Union News Bulletin and Annual Report, 1948. Membership list revised March, 1949.	35	373	Carnegie Museum, Pittsburgh, Pennsylvania; August 25-27, 1948.	A. Myra Keen
16	1949	The American Malacological Union News Bulletin and Annual Report, 1949. Membership list revised Nov., 1949.	36	391	University of Miami, Coral Gables, Florida; June 16-18, 1949.	Elmer G. Berry
17	1950	The American Malacological Union News Bulletin and Annual Report, 1950. Membership list revised Dec., 1950.	38	407	Chicago Natural History Museum, Chicago, Ill.; June 14-16, 1950.	Fritz Haas
18	1951	The American Malacological Union News Bulletin and Annual Report, 1951. Membership list revised Dec., 1951.	40	436	Buffalo Museum of Science, Buffalo, N. Y.; August 22-24, 1951.	Joseph P. E. Morrison
19	1952	The American Malacological Union Annnual Report 1954, 20th Annual Meeting; Pacific Division (AMUP) 5th Annual Meeting. Membership list revised Dec., 1952.	51	452	Museum of Comparative Zoology, Cambridge, Mass.; August 20-22, 1952.	Jeanne S. Schwengel
20	1953	The American Malacological Union and A.M.U. Pacific Division, Annual Report, Dec. 31, 1953.	51	481	University of Kansas, Lawrence, Kansas; June 25-27, 1953.	A. Byron Leonard
21	1954	The American Malacological Union Annual Report 1953, 20th Annual Meeting; AMU-PD, 7th Annual Meeting. Membership list revised Dec., 1954.	44	526	University of New Hampshire, Durham, N. H.; August 16-18, 1954.	Joseph C. Bequaert
22	1955	The American Malacological Union, the AMU-PD, Annual Reports for 1955. Membership list revised Dec. 31, 1955.	58	545	Staten Island, New York; July 26-29, 1955.	Morrison K. Jacobson
23	1956	Twenty-fifth Anniversary Number, The American Malacological Union Annual Report; Twenty-second Annual Meeting, 1956.	53	573	San Diego, California; July 11-14, 1956.	Allyn G. Smith

THE TWENTY-SECOND ANNUAL MEETING

Kipling had it all wrong. East and West did meet and with great benefit when in July, 1956 the Pacific Division of the American Malacological Union, together with the Conchological Club of Southern California, entertained the parent organization in San Diego, California. It was the twenty-second annual meeting of the A.M.U. but marked the twenty-fifth anniversary of the organization, meetings having been suspended during World War II.

The Hotel Lafayette had been chosen as the convention site, providing housing, meals and meeting facilities under one roof. The beautiful grounds and the swimming pool which the hotel encircles were much appreciated by the very young delegates who otherwise would have found the lecture sessions heavy going. The usual three days had been extended to four to allow ample time for discussion of papers, the display, comparison and perhaps swapping of shells, and for just getting acquainted.

Wednesday, July 11th was the scheduled opening day but a reception in honor of the visiting delegates was held on Tuesday evening by the Conchological Club of Southern California. Refreshments and large gift cartons of specimen shells were but the beginning of a series of thoughtful deeds which were to keynote the entire meeting. California is a beautiful state, San Diego a most charming city and surely the hospitality of western folk is not to be excelled anywhere.

Wednesday morning fifteen sleepy collectors stumbled from the hotel at 4:30 (the tide does not wait) to be led by Mr. Emery Chace to Point Loma on the upper end of San Diego Bay. This once-famous collecting place was put under rigid restriction in 1932 when the Navy and Coast Guard occupied the entire area. For this occasion a special permit had been obtained and it was with great anticipation that the old timers and those to whom Pacific collecting was a new experience visited the rocky point below the old Spanish lighthouse. Surely five hours never passed so swiftly! As he led his wet and laden colleagues back to the hotel for a belated breakfast Mr. Chace expressed satisfaction that species once nearly collected out have reappeared in large numbers during the years they have been left undisturbed.

Registration was heavy during the forenoon and at 11:00 those present assembled in a meeting room off the lobby to be called to order by President Allyn G. Smith who wielded a specially presented gavel, the loan of the Pacific Division. He welcomed all present on behalf of the host organizations, then assured the eastern visitors that on behalf of his fellow Californians he was bidding them doubly welcome.

He introduced the Chairman of the Pacific Division, Mr. Edward P. Baker, who added his personal greetings. President of the Conchological Club of Southern California John E. Fitch was introduced; on behalf of the Club he issued a cordial invitation to the visitors to attend the next regular meeting if they happen to be in the Los Angeles area. President Smith then introduced delegates from the Long Beach Shell Club, the Pacific Shell Club, the Northern California Malacozoological Club and the recently-organized Sacramento Shell Club. Others invited to "stand and take a bow" were Mr. and Mrs.

Emery P. Chace of the San Diego Museum, Mr. Merton E. Hinshaw of the Pacific Grove Museum, Miss Ruth E. Coats, Secretary-Treasurer of the Pacific Division, Mrs. Margaret C. Teskey, Secretary-Treasurer of the A.M.U., Dr. S. Stillman Berry, who is one of the three honorary members, and Mr. Andrew Sorensen, the only honorary member of the Pacific Division. It was also established that "Dad" Sorensen was the senior delegate of the meeting.

A noon recess was declared, and when at 1:30 President Smith rapped for order he introduced the opening paper:

PHILIP P. CARPENTER, HIS LIFE AND WORK IN PACIFIC COAST CONCHOLOGY

Katherine V. W. Palmer
Paleontological Research Institution, Ithaca, New York

(Abstract)

W. H. Dall, Paul Bartsch, and Philip P. Carpenter described the largest number of molluscan species from the area of San Diego, California, to British Columbia. Carpenter's association with the Pacific fauna, his life and collections have been obscured by time, distance, unfamiliarity with collections, and rarity of publications. Philip Carpenter, a Presbyterian minister born in Bristol, England (1819) early associated with scientists and shells. After buying (1855) the famous Mazatlan Collection of over 100,000 shells, he published a catalogue of the collection, including 694 species (222 new) and gave the shells of that catalogue to the British Museum (Natural History). He donated a duplicate collection to the Natural History Cabinet of Albany, New York, and brought the collection to Albany, arranged it, worked at the Smithsonian Institution, travelled over 12,400 miles in America, made arrangements for the collection of the Smithsonian Institution and all of Gould's extensive material to be shipped to him in England. From 1860-65 he studied the collections, received large suites of shells from collectors on the West Coast, including J. G. Cooper, Hemphill, Stearns, Newcomb, and Powell, and published about half of his 35 papers. In 1865, Carpenter, his wife, and adopted son went to Montreal, Canada. He gave his large collection of shells to McGill University, where he spent a large part of his time arranging the material and working on an extensive monograph of the chitons which was unfinished at his death in 1877. Over 90 letters in the Redpath Museum are mainly from conchologists. Over 250 molluscan species were described by Carpenter from the West Coast, San Diego to British Columbia. The types are mostly at the U. S. National Museum and McGill University. Few were figured, type localities, and type location erroneously understood. A monograph by this author covering 260 species and illustrating over 190 is to be published by the Geological Society of America.

Dr. Palmer's paper was illustrated by slides of Carpenter's mounted shells, scenes in the Redpath Museum and Kodachromes of Mazatlan as it appears today.

Smith: "This was an apt subject to lead off our program. Dr. Palmer has brought to life for a brief period a great conchologist." Stohler: "How soon may we expect this publication?" Palmer: "I cannot say with certainty; it must wait its turn which may mean a year or more. It will be a big job; there are 1220 pages of manuscript and 35 plates. I am so happy to be receiving the encouragement and recommendation of the west coast people." Emerson: "Are you working up the Panamic type species?" Palmer: "Yes, but later and in a smaller paper. We're doing the Mazatlan plates only, to illustrate the catalogue." Berry: "This is important work; I struggled for years with Carpenter material. I question his use of the word 'type'; I have seen two or more specimens of the same species so labeled in his handwriting, so Carpenter's types are not to be regarded specifically as holotypes. His dates are open to question; they are not consistent. I have two quite different editions of the Mazatlan catalogue with conflicting dates. Dr. Palmer has a problem, for the fate of several types hinges on the dates. Iredale has rejected all earlier than 1857."

NOMENCLATURAL PROBLEMS IN THE ARCHAEOGASTROPODA

A. Myra Keen
Stanford University

(Abstract)

The Tertiary Gastropoda of the superfamilies Patellacea, Trochacea, Neritacea, and Cocculinacea comprise something over 600 generic and subgeneric units. Obviously a thoroughgoing revision is beyond the capacities of one worker in the time available. Hence, the nomenclatural status of all named units was given primary emphasis and a partial reclassification made to take into account some of the recent work on anatomy.

Principal nomenclatural changes necessitated by this study result from detection of overlooked type selections. Fischer in 1873 designated types for several groups now regarded as subgenera of *Astraea:* for *Pachypoma,* Gray, 1850, he selecetd *Astraea caelata,* a Caribbean form very close to the type of *Lithopoma* Gray, 1850 *(Trochus tuber* Linné, 1767); and hence *Pachypoma* becomes a synonym of *Lithopoma.* For *Pomaulax* Gray, 1850, Fischer designated *Trochus japonicus* Dunker, 1845 as type. Pilsbry has shown that the operculum of this is almost identical with that of *A. gibberosum* (Dillwyn) [*"A. inaequalis* Martyn" of authors]. What we have called *Pachypoma* now becomes *Pomaulax* and what we have called *Pomaulax* must either be given a distinctive name or assigned elsewhere. I favor assignment to *Uvanilla* Gray, 1850, the type of which also was selected by Fischer, 1873, as *Trochus unguis* Wood, 1828. Caribbean species now assigned to *Astralium* by Woodring's 1928 designation are left without appropriate group name, for Fischer designated *Turbo calcar* Linné, 1758, an Indo-Pacific species, as type.

Also overlooked by most modern authors is the designation of Anton, 1839, for the type of the Indo-Pacific group *Stomatella* Lamarck, 1816—*S. auricula,* a form up to now regarded as type of a subgenus of *Gena. Gena now, therefore, becomes a subgenus of Stomatella* and the *Stomatella* of authors is nameless. However, an Australian worker, B. C. Cotton, has a name for it in manuscript.

A few West American species should be reallocated because of recent discoveries as to radulas, morphology of type species, and so on. *"Turcicula" bairdi* is not a *Turcicula* and probably should be transferred to *Bathybembix,* a Japanese group related to *Lischkeia. Lirularia* Dall is apparently not a subgroup of *Margarites* and is tentatively placed in Solariellinae, together with *Cidarina.*

The type of *Phasianella* is an Eocene European species very close to the type of *Tricolia.* The large Recent Australian form *P. australis* should be transferred to *Eutropia,* of which it is type.

Dr. Keen distributed mimeographed sheets listing the type species under discussion together with the proposed changes.

Smith: "It is disturbing to have to change names; besides being a bother it means a tremendous amount of work. Sometimes I wonder if it wouldn't be simpler to do away with generic names entirely, or maybe use the Dewey Decimal System!" Emerson: "Where have you placed *Tegula montereyi?*" Keen: "I have not worked on a specific level; undoubtedly when we get to that we'll find many things misplaced."

LEWIS W. SLOAT, PIONEER CONCHOLOGIST IN CALIFORNIA

Leo G. Hertlein
California Academy of Sciences

(Abstract)

Lewis Warrington Sloat (November 26, 1815 - March 3, 1886) was the son of Rear Admiral John Drake Sloat, Commander of the United States Naval Force in the eastern Pacific at the time the American flag was raised at Monterey, California, in July, 1846. According to E. A. Sherman, biographer of the Admiral, the son acted as private secretary to his father while the latter was on the Pacific station.

It appears that the following year young Sloat removed to San Francisco, became an authorized Notary Public, Commissioner of Deeds, and a member of a real estate and brokerage firm. He was one of the founders of the California Academy of Sciences and first Secretary of that institution. He was an amateur conchologist and possessed a cabinet of shells. No doubt the Secretary's interest in this field was a contributing factor in the Academy's decision to accumulate a collection of shells, which activity began with the inception of that institution and has continued to the present day, interrupted, unfortunately, by the total loss of the collection during the earthquake and fire in 1906. A few years after the founding of the Academy, Sloat went east, and little is known of his subsequent activities, nor is any photograph of him available in any biographical notice.

Of special interest to West American conchologists is the fact that Sloat, together with a Captain Stone, collected at Guaymas and Pinacate Bay, Mexico. Evidently Sloat prepared a manuscript on this collection and was in touch with P. P. Carpenter, because the latter in 1864 (Rept. Brit. Assoc. Adv. Sci. for 1863, pp. 666-667) listed 27 species in that collection. Four species were very briefly described as new and attributed to "Sloat MS." Carpenter considered these to be synonyms of known

species. However, subsequent study leads to the conclusion that the large porcellanous form described as *Venus cortezi* by Sloat is a valid subspecies of *Chione fluctifraga* Deshayes.

Morrison: "Was he ever in communication with Isaac Lea? I recall *Unio sloatianus* Lea and wonder if it was named for him." Hertlein: "It might very well have been, but I don't know."

PLEISTOCENE INVERTEBRATES FROM PUERTO PEÑASCO, SONORA, MEXICO

William K. Emerson
American Museum of Natural History, New York City

(Abstract)

Sixty-two species of invertebrate fossils are recorded from the vicinity of Puerto Peñasco, Sonora, Mexico, northeastern shore of the Gulf of California. These fossils occur in moderately indurated sands, locally grading into deposits of coquina, varying from 3 to 20 feet in thickness. These sediments are generally flat-lying or only slightly inclined and lie disconformably upon blocks of basalt at Punta Peñasco and upon quartz diorite at Punta La Cholla.

It is concluded that the fossil mollusks, barnacles and bryozoans from Punta Peñasco are of late Pleistocene age. All except one of the species of mollusks are found living at the present time in the Gulf of California, and all but five of the mollusks occur in the vicinity of Punta Peñasco. The single species of fossil crab has been recorded living in the waters between San Felipe, Baja California, and Peru. The three species of bryozoa in the collection have been recorded living in the Gulf of California at the present time, and all range south as far as Panama or Ecuador, one from Point Conception, California, to Peru and the Galapagos Islands.

There are no elements in the fossil fauna which would indicate essential differences of paleoecological or paleotemperature conditions between the Pleistocene depositional environment and the conditions existing at the present time in the vicinity of Puerto Peñasco. These findings have been recorded in detail elsewhere (Hertlein and Emerson, 1956).

Color slides and projected maps of the locality illustrated this paper.

Smith: "I get the impression that there were other things there as well as marine shells. It's always a good idea to take back material which may be useful to workers in other field." Chace: "Last year in Turtle Bay I found unreported Pleistocene shells, brought home 25 or 30 pounds of them." Kanakoff: "It would be interesting to hear just what the extinct species were. And did you work out numeric distribution? What was the ratio to present populations?" Emerson: "It was impossible to work out the ratio; we were after the overall picture, determining what was there, not how many of each." Keen: "Do you recall finding a large *Turritella* there? I found some in Mexican material but I can't decide in which stage they belong." Emerson: "Sorry; I didn't notice especially and can't remember."

During the intermission at this point Mr. W. E. Naylor distributed gift specimens of *Nassa lutestoma* which he had collected at La Paz, Baja California.

SOME PROBLEMS WITH THE WEST COAST NATICIDAE

John Q. Burch
Conchological Club of Southern California

(Abstract)

The conclusion of the writer is that *Natica tectula* Sacco is congeneric with *Natica clausa;* that the group is clearly defined and sufficiently distinct from *Natica* s.s. to be given full generic value. The genus is therefore *Tectonatica* Sacco 1890 with *Cryptonatica* Dall 1892 in synonymy.

Opercular characters are not consistent for taxa above the species.

The assignment of *Eunaticina oldroydii* Dall to the genus *Eunaticina* Fischer was sound and should stand.

The writer concludes that a large number of the subdivisions of *Natica* proposed by various authors should be discarded and the species recognized under *Natica* s.s.

Specimen shells were displayed to illustrate this paper.

Smith: "Thank you, John, for bringing up such an interesting problem. Thanks also from all of us for the important job you're doing as Editor of *The Minutes of the Conchological Club of Southern California.* I wonder if everybody realizes that you've been doing it since 1940, and that the current issue is number 159? It's a very real contribution to our field."

HUMAN BLOOD FLUKE (SCHISTOSOMIASIS) CONTROL IN EGYPT

Henry van der Schalie
University of Michigan

(Abstract)

A paper entitled "Bilharziasis in Egypt" was read by title last year but it was given at this year's meeting. The review appearing in the 1955 report indicates the nature of the problem as it was undertaken in a project conducted by the World Health Organization in Egypt since 1952. The incidence of human infection by blood flukes (called bilharziasis or schistosomiasis) is unusually high in Egypt. The consequences of this disease are far more serious and involved than one would ordinarily suspect. If the patients died as they would from cholera or plague it would be possible to declare a campaign and effective control meaures would follow. But this disease is mainly debilitating and it is most common among the peasants who are constantly exposed to infection. To date there are no drugs that serve as a good cure. The hope for control rests

with the possibility that ways and means can be devised to obtain effective snail control. Some good molluscocides (Dinitro and halogenated phenols) have been developed and they are at present being tested in critical areas. One of our members, Dr. Elmer G. Berry, is at present conducting field tests on the snails in the Delta area with these newer mulluscocides.

It is interesting to note that in the recent discussions of the High Dam at Aswan there was no mention of the fact that the benefits that may accrue to the Egyptians through the construction of that dam may well be cancelled to a large extent by the high incidence of bilharziasis that would most likely follow. It is well established that in the Delta, where both the intestinal *(Schistosoma mansoni)* and the vesicular *(S. haematobium)* occur, the incidence of both schistosome infections among the people is 60% or more; while above Cairo where the irrigation practiced is of the basin type the incidence is about 6% and only the vesicular type occurs. It is quite likely that as soon as perennial irrigation is introduced with the building of the high dam at Aswan, the incidence of bilharziasis will increase to the same alarming proportions now found in the Delta region. This disaster can be avoided only if better snail control is developed.

Smith: "It is really surprising what fields A.M.U. members get into. If there is such a thing as a useless naturalist, he doesn't exist here."

THE LAW OF THE NEIGHBORHOOD

Joshua L. Baily, Jr.
Biological Research Institute, Zoological Society of San Diego

This paper was accompanied by drawings and charted figures.

This completed the formal program of the opening day and the session was adjourned until the following morning. The Executive Council met following dinner, and other members gathered in the comfortable lobby to while away the evening hours in informal discussion. Those who had participated in the morning field trip counted up the hours which had ensued since 4:30 A.M. and soon were missing from the circle.

Thursday's morning session was opened with the announcement that a letter had been received from the secretary of the Hawaiian Malacological Society, introducing three of the members of that body (Messrs. Ostergaard, Souder, and Summers) who were present as delegates with instructions to report later to their Society on proceedings and papers.

VENEMOUS MOLLUSKS

Bruce W. Halstead, M.D.
School of Tropical and Preventive Medicine, Loma Linda, California

(Abstract)

Representatives of poisonous and venomous molluscs are largely distributed throughout the classes Gastropoda, Pelecypoda, and Cephalopoda. The bulk of the poisonous molluscs are members of the class Pelecypoda,

particularly important genera are: ***Mytilis, Mya, Saxidomus, Schizothaerus, Macoma, Donax, Modiola,*** etc. All are concerned with the disease paralytic shellfish, or mussel poisoning, of which the causative agents are one or more species of dinoflagellates. Most venomous molluscs of concern to man are members of the genera *Conus* and *Octopus*. The venom apparatus of *Conus* consists of the venom bulb, venom duct, radular sheath, and radular teeth. The pharynx and proboscis are important accessory organs. The glandular epithelium of the venom duct is believed to be the site of venom production. The venom is neurotoxic, but its chemical and pharmocological characteristics are unknown. A number of deaths in humans have been reported. The venom apparatus of *Octopus* consists of the anterior and posterior salivary glands, buccal mass and mandibles, or jaws. The venom is produced by the salivary glands. *Octopus* venom appears to have neurotoxic properties. The exact nature of the venom is still unknown.

Dr. Halstead's paper was illustrated by drawings of the radular sheath and tooth of *Conus striatus*, of the venom apparatus of *Octopus fitchii* and finally by color slides of the anatomy of cones in general and some of the more poisonous species.

Smith: "So to anybody who collects *Conus* or *Octopus*, beware!" Souder: "In Hawaii a diver picked up *Conus halitropus*, stored it in the pocket of his trunks until he got ashore. It stung him right through the trunks, caused a red area and quite a swelling which later went away. And on Kwajalein I saw a man stung on the hand by a species of *Conus;* his hand became quite numb, though not painful. That too cleared up before long." Morrison: "On Raroia I pickled a *Conus textile*, packing cheesecloth in the aperture. Back at the Museum months later I found teeth in the cheesecloth three-eighths of an inch long and the size of number 60 thread. The alcohol had coagulated two drops of yellow venom which remained on the lip of the shell. The hollow teeth differ from the finest hypodermic needles made by man only in that they are barbed. Any cone with teeth long enough to pierce the skin must be regarded as dangerous." Baily: "Last year Alan Kohn showed us pictures of cones attacking fish. I once was bitten between the fingers by an octopus; it bled freely but no other effects were noticed." Berry: "I'm glad that it is being recognized that mollusks other than cones are venomous. The small *Octopus fitchii* from the area of San Felipe has a bite which resembles in its effects the sting of a bumble bee, yet a man I know was bitten about ten times on one hand and each time felt only a slight nip, no other reaction. Nothing has yet been done on variation in individual susceptibility nor the problem of relative immunity in this field." Teskey: "Do all octopi bite?" Berry: "No, or if they do they're not on record. There is a little-known species (*Octopus alecto*) down in the Gulf which casts off an arm when annoyed and tries to escape, but so far as I know has never bitten anyone."

ANATOMY OF THE REPRODUCTIVE SYSTEM OF ONCOMELANIA NOSOPHORA, AN INTERMEDIATE HOST OF SCHISTOSOMA JAPONICUM

Ariel A. Roth and Edward D. Wagner
School of Tropical and Preventive Medicine, Loma Linda, California
Illustrated with slides, drawings and photomicrographs.

(Abstract)

The gross and microscopic anatomy of the male and female reproductive system have been determined. The more important findings in the female are the presence of an accessory gland histologically divisible into four parts, a bursa copulatrix close to the seminal receptacle and a gonopericardial diverticulum.

The male reproductive system is characterized by the presence of an elongated coiled seminal vesicle and a prostate gland which is histologically divisible into two portions.

STUDIES ON MOVEMENTS AND REPRODUCTION WITH SPECIAL EMPHASIS ON THE CROSSING OF VARIOUS SPECIES OF ONCOMELANIA, MOLLUSCAN HOSTS OF SCHISTOSOMA JAPONICUM

Lois Wong, E. D. Wagner and Dale Inaba

School of Tropical and Preventive Medicine, Loma Linda, California

Illustrated by slides and charts of longevity, survival, egg production rate, fertility, etc.

(Abstract)

The movement of snails were studied. A large tray with a thin layer of mud film on the bottom was used to trace the snail tracks. Average distance traveled by *Oncomelania nosophora* and *O. quadrasi* is 2.2 cm. and 10.6 cm. per hour respectively. The maximum continuous number of hours a snail did not move from one spot was 22¼ hours for *O. nosophora* and 4½ hours for *O. quadrasi.*

O. nosophora would not reproduce in saucers containing only filter paper and water. After being kept in such saucers for one year, they were placed in saucers with mud and gravel, and reproduction occurred.

O. nosophora and *O. quadrasi* and *O. formosana* would intercross and produce young. Further studies are being made to determine if the hybrids will produce young.

As she concluded, Dr. Wong spoke ruefully of the difficulty in keeping track of her charges during the long night hours. Stohler: "In watching or locating snails at night I suggest that it would be handy to add radio-active pellets at the beginning of the experiment so that they could be traced with a Geiger counter. This has been done in making studies of the Yosemite toad, using cobalt pellets beneath the skin."

Van der Schalie: "We at Ann Arbor are very much interested in the work being done at Loma Linda. We have about the same problems in our study of *Pomatiopsis;* in basic anatomy the two are quite similar. However, we haven't been able to locate the gonopericardial duct as they seem to have done. This work is especially difficult because we're all working in what amounts to a Tower of Babel, with everybody calling reproductive structures by different names. We need to standardize our terms and our information.

We've borrowed our terms from vertebrate zoology; maybe it's time we developed our own." Smith: "I'd like to add that we are fortunate to have gotten a close look at some very important work. We are indebted to Dr. Halstead and his staff."

During an intermission at this point Mr. John P. Strohbeen produced large cartons of shells from Mexico and California which he distributed on behalf of Mr. Andrew Sorensen and himself, the first choice going to eastern members. Especially prized were beautiful specimens of *Haliotis sorenseni,* collected by one of the generous donors and named for the other.

Not to be outdone, Mr. Roy L. Morrison handed out specimens of *Donax gouldi* put up in alcohol, two to a vial with one of each pair adorned with an attached hydroid (*Clytia bakeri*). He observed that this bivalve seems to disappear and then reappear on California beaches, and that he would appreciate an explanation of an interesting fact concerning the large colony from which the gift specimens had been collected. Living shells wearing the small green hydroid were invariably close by another of similar color pattern but without the hydroid. The next morning only those adorned with hydroids were present, all others had disappeared. What was the factor? Was the apparent selection by the hydroid based on sexual difference, does color or pattern play a part in selection, and has a study been made along these lines? Jacobson: "We must get together and discuss this; I have been observing our *Donax fossor* which also has interesting habits; I wonder if they have this in common?"

Mr. John E. Fitch was introduced; he announced that it had been brought to the attention of those present that it was the fortieth anniversary of the wedding of Mr. and Mrs. John Q. Burch. "So we have been quietly circulating a resolution of congratulation which has been signed by everyone present, including one of the Burches!" Rose Burch countered that she had been tricked into thinking that she was signing a birthday card for another person, but expressed the deep appreciation of John and herself for the thoughtful gesture. Then a cake to honor the occasion was ceremoniously borne in and devoured on the spot since it was a single doughnut decorated with a huge lighted candle; upon that hilarious note the gavel was rapped to signal the close of the morning session.

Thursday afternoon was given over to a visit to the San Diego Museum of Natural History where Mr. and Mrs. Emery P. Chace are curators of the shell collection. This is a very large general collection incorporating the collections of H. N. Lowe, Fred Baker, A. M. Strong and J. F. Anderson, among others. The doors were removed from the cases and soon the room was crowded with eager viewers as they examined trays of whichever species interested them the most.

Later the Director of the Museum, Dr. George Lindsay, extended a cordial welcome on behalf of himself and the Museum staff, expressing his appreciation of the fine work the Chaces are doing and inviting his audience to inspect the remainder of the exhibits before taking their leave. This suggestion was accepted and delegates toured the building singly or in groups, returning to the mollusk department to partake of light refreshments furnished by the Museum, a gracious gesture much appreciated by everyone.

The daughter of Dr. Fred Baker, Miss Molly Baker, was present and was greeted by many of the older delegates who remembered both her and her late father with affection.

An evening session had been scheduled, so following dinner an instructive period began with scenes from the 1955 annual meeting at Staten Island. The Kodachrome slides were furnished by Mr. Karl Jacobson, Dr. E. Laurence Palmer and Mrs. Marianna Paulson.

AN INTRODUCTION TO THE SHELLS OF WEST AFRICA

CRAWFORD N. CATE
Conchological Club of Southern California

(Abstract)

These shells were obtained in exchange for photocopies of rare conchological literature. The exchangee, the director of a marine biological station on the west coast of Africa, was a member of the recent expedition to Portuguese West Africa sponsored by the National Geographic Society on the research vessel *Calypso*. There were many species of shells in the exhibit representing most of the genera to be found in the area. Due to the scarcity of collectors in the region an ecological representation of these shells is not common.

The shells were exhibited in large Riker mounts. In addition, color slides were shown of the contents of a large box of exotic shells from the Sulu Sea, for which clothing and foodstuffs were exchanged and gratefully received due to the extreme poverty of the stilt-dwelling natives who collect these mollusks for food.

NOTES ON AMERICAN RANGIA

JOSEPH P. E. MORRISON
U. S. National Museum, Washington, D. C.

Sorensen: "I know where you can find *Rangia* by the million! I'll send you some." Berry: "And although *Rangia* is not common everywhere, I know a desert site where one can get beautiful specimens. I'll see that you get a set." Morrison: "Thank you! I hope that everyone remembers that in giving material to the National Museum you're giving to yourself; we are there to keep *your* collection."

Mr. Roscoe O. Stotter exhibited shells which he had collected at a little-known spot near San Felipe. His method of hunting marine species in shallow water while floating about face-down on an air mattress, employing mask and double snorkles sounded like the ultimate in collecting luxury; effective, too, as his beautiful specimens of *Oliva angulata, Conus perplexus* and *Natica bifasciata* were laid out to prove. "The last time I was there the *Oliva angulata* were so plentiful that a dozen could be picked up without moving. But don't try going this time of year. It's 112° and no water to be had." Then with the generosity which had characterized the meeting he produced duplicates for everyone.

The evening was concluded by an hour-long motion picture of the marine life of Cholla Bay, entitled *The Vermillion Sea*. A compilation of four years' work by Miss Francis Cramer, instructor in Life Sciences at Los Angeles Junior College, and her associate Mr. Tyler, this film featured various marine invertebrates; at its conclusion the audience drifted off to bed to dream of undulating flatworms, of bivalves which darted about and crabs which grimaced and threatened.

Friday's first session began with the reading of letters and wires from several A.M.U. members expressing regret at their inability to be present.

MALACOLOGICAL OPPORTUNITIES IN CUBA

Morris Karl Jacobson
New York Shell Club

(Abstract)

Although the land shells of Cuba have been collected and known for a very long time, most of the work done on these snails has consisted of the description of new, or supposedly new, genera, species and subspecies. Hence the opportunities for original and important work are limitless.

Perhaps the most important task is the compilation of complete mollusco-faunal lists of the many natural areas of the island. Up to now, with very few exceptions, such lists have been either unsatisfactory or entirely wanting. Furthermore, what may be called mollusco-faunal dissections of restricted areas in the mogotes and sierras should be undertaken, with each specimen collected carefully noted for shade, cover, altitude, association and other microbiological factors. In Cuba, where molluscan isolation exists to a fantastic degree, such studies cannot fail to be of the greatest value and interest. The true relationship of the many forms of *Viana regina, Emoda sagraiana* and *Jeannaretia sp.* can be discovered only by careful field collection and the mapping of the true distribution of each isolated variety. These opportunities are all in addition to the usual ones of working out life histories (of how many species are even the eggs known?), anatomical investigation and the realization of breeding experiments. All in all, in Cuba there is a truly open field for young malacologists seeking problems on which to put their requests for grants.

The series of Kodachrome slides which accompanied this paper included scenes of Cuba and of some of the shells to be collected in that lovely island.

Van der Schalie: "There does seem to be a distressing lethargy (for this sort of systematic study) among those who should be the most concerned. It's the same in Puerto Rico; in 1940 I spent some time there, made district maps, charted clines, altitude, degree of moisture, distribution of species. Since then nothing has been done, and the study has been dropped. Such work *must* be continued, and with the speed-up of our modern age, distribution and hybridization is going on so rapidly that we don't have much time left." Jacobson: "And that's why I am trying to interest the young people." Elsie Chace: "Lowe said that the chance of duplicating previous collecting there was poor unless you got the same guide. I expect that is still true?" Jacobson: "Yes, and you need a guide. It's important that he be well-informed, reliable and honest—in that order!" Berry: "The richness of Cuba must be seen to be believed. It is the land shell paradise of the world. Many years ago I went there on business. I was in virgin territory, and, with absolutely no collecting experience, in fifteen minutes I gathered a lot which later proved to contain eighteen species! Then on the way back I ran into two men whom I had long wanted to meet: de la Torre and Henderson. Later Henderson mentioned our meeting in *The Nautilus.*" Van der Schalie: "And that was the start of the Smithsonian Expedition which went to the area and studied it thoroughly." Jacobson: "According to Cooke, Jamaica beats Cuba in number of species, but Cuba is far ahead in richness and interest. When the A.M.U. went on a field trip during the 1938 meeting the first snail collected was a new genus—and only twenty miles out of Havana!" Berry: "On a later trip to Cuba I saw a man find a sinistral Urocoptid in a pile of roadside rocks near Havana."

This interesting paper and the subsequent discussion had consumed so much time that an intermission was in order, and again it was Christmas as a large carton of shells from the collection of the Misses Katherine and Agnes Shuman was hoisted to the speaker's table and delegates invited to help themselves. This time the prizes were large specimens of *Pecten multirugosus.*

A letter from Mr. Karl W. Greene, editor of *Hawaiian Shell Notes,* was read, an invitation to members of the A.M.U. to subscribe to this publication of the Hawaiian Malacological Society. Mr. Greene also expressed a desire to exchange for publications of other malacological organizations. Chace: "*Hawaiian Shell Notes* is a very worthwhile paper, published monthly and the subscription price of $1.50 is most reasonable."

STATUS OF THE LINNAEAN ABALONE, HALIOTIS VARIA

Robert R. Talmadge
Willow Creek, California

(Abstract)

The Linnaean abalone, *Haliotis varia,* was compared by population series throughout the range of the species. By utilizing the old rule of seventy-five percent similarity, population areas could be rather accurately plotted on geographical maps. It appears that there are three basic geographical races that freely intermingle and intergrade in the areas of contact. The basic differences are thought to be in the sculpture and shape of the shell, while the structure of the animal remains static. Special attention was given to color and color pattern, which appear to be individual characteristics, not constant enough to be called racial.

Jacobson: "What do you do with 74% or 76% in applying your 75% rule? Talmadge: "Well, you have to draw the line somewhere."

A STUDY IN PORPHYRIN FLUORESCENCE IN MOLLUSCAN SHELLS

Edith Krugelis-MacRae and Rudolf Stohler
University of California

(Abstract)*

A red fluorescence is emitted when some molluscan shells are exposed to long-wave ultra-violet radiations; this fluorescence has been shown by chemical analysis as due to porphyrin.

The present study is concerned with fluorescence in a variety of Californian and exotic species, and is a confirmation and extension of the list compiled by Comfort (1949) from the British Natural History Museum. The shells investigated here are from the collections of the California Academy of Science, the University of California, and private individuals. About 400 shells were examined. Fluorescence was found in shells of the following families: *Trochidae, Fissurellidae, Turbinidae, Phasianellidae, Cypraeidae, Eratoidae, Haliotidae, Bullariidae, Velutinidae* and *Pteridae.* Some examples of fluorescing shells are exhibited.

Extracts of porphyrin from *Homalopoma carpenteri* (Pilsbry) and *Fissurella volcano* Reeve have been identified by paper partition chromatography as uroporphyrin.

It is difficult to make broad generalizations concerning the occurrence of porphyrin in shells. It appears confined to some of the less specialized groups, but does not appear to be present in all primitive groups nor in all species of any one family. It does not seem to be related directly to habitat, body color, light sensitivity, or nutrition. The ability of some molluscan groups to produce and deposit porphyrin raises interesting biological and biochemical questions which await further investigation.

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*This investigation was supported in part by a research grant (C-2410 M and G) from the National Cancer Institute, of the National Institutes of Health, Public Health Service.

Dr. Stohler demonstrated the fluorescent qualities of *Cypraea mappa* and the lack in other species of *Cypraea,* holding a portable 3600° ultraviolet lamp together with the shells above his head that all might see. As he concluded he remarked that some fossil shells are so activated but that only some specimens of an identical lot were so affected.

Baily: "Is the angle of incidence the same as the angle of reflection?" Stohler: "I am a zoologist, not a physicist. I do not know." Berry: "I wonder if the fact that some specimens are activated while others are not isn't the result of some special preparation?" Palmer: "At the Paleontological Research Institution we tested fossil shells of the Caloosahatchee formation, found them to be strongly activated; since they had not been too long collected nor especially treated, I'm sure nothing could have contaminated them. The *Scaphella* species were very responsive, yet recent *Scaphella* is not activated at all. Other species showed both red and yellow in several parts of the interior layer." Teskey: "A report on fluorescence in Caloosahatchee fossils was in last year's A.M.U. report bulletin. At the Buffalo Museum of Science we found that not only patterns came out on fossil cones, mitres and volutes, but that the muscle scars in some of the bivalves fluoresced yellow." Stohler: "Only porphyrin shows as red; the yellow was caused by something else." Spicer: "Is this reaction uniform for a species throughout its entire distribution?" Stohler: "Not enough work has been done for a definite answer." Chace: "I'll examine the shells in the San Diego Museum." Spicer: "Then report back in *The Nautilus!*" Smith: "Does this fluorescent property vary or disappear with age?" Stohler: "We don't yet know. Some very old (recent) shells in the British Museum show fluorescence. We don't know if porphyrin comes from food or if it results from disease; much more study is needed." Baily: "Are you sure the red is always porphyrin?" Stohler: "Yes. And if you want to see beautiful fluorescence, put a light on a new-laid hen's egg. It's not correlated with any red color in the shell; porphyrin is apparently colorless. Finally, on the basis of fluorescence I would lump *Fissurella volcano crucifera* Dall with the typical." Keen: "Be careful in working too long with this light; it can give one a terrific headache."

SOME NEW (PALEONTOLOGICAL) RECORDS AND RARE OCCURRENCES IN SOUTHERN CALIFORNIA

George P. Kanakoff*
Los Angeles County Museum

This paper was accompanied by a large amount of well selected and nicely prepared exhibit material.

Following lunch the annual business meeting was called to order and a resume of the proceedings of the meeting of the Executive Council was made by the secretary. The treasury report which listed a 1956-57 balance of $829.39 had been approved as read, as was the secretary's report of a membership on June 1, 1956 of 545. The publication "How to Collect Shells" was (on that date) $55.10 in arrears of publication costs with a backlog of 675 copies remaining to be sold. The Council had passed a recommendation to the incoming president that a committee be appointed to direct a revision and republication of this useful booklet. Four By-Laws drafted for the purpose of interpreting and widening the scope of the Constitution had been discussed and adopted by the Council. (By-Laws 1 - 4, page 31, this bulletin.) The Council had gone on record as recommending that those in charge of selecting dates for the annual meetings of the A.M.U. and the A.M.U. Pacific Division make an attempt to space the dates of these meetings as far apart as possible, in order to enable members living at great distances to attend both meetings. A letter had been received by the Council from Mr. Percy A. Morris of the Peabody Museum at New Haven, Connecticut inviting the A.M.U. to hold the 1957 annual meeting at Yale University, of which the Museum is a part. This invitation had been accepted by the Council.

The slate of officers and councillors-at-large selected by the nominating committee was read: President: Ruth D. Turner; Vice-president: Aurile LaRocque; 2nd Vice-president: Edwin P. Baker; Secretary-treasurer: Margaret C. Teskey; Publications Editor: George M. Moore; Councillors-at-Large: Charlotte Dawley, Leo G. Hertlein, Eugene H. Schmeck, Germaine L. Warmke. The motion was made and carried that the secretary be instructed to cast a unanimous ballot for the election of the panel as read.

There being no further business, the meeting was closed and the rostrum turned over to the president of the A.M.U. Pacific Division, Edward P. Baker, who opened the annual business meeting of that body. The reports of the secretary-treasurer, Ruth E. Coats, were accepted as read. The chairman of the nominating committee made the recommendation that the existing panel of officers be retained for 1956-57; this recommendation carried without opposition. The motion was made from the floor that for purposes of clarification it is to be understood that the "four additional members at large" mentioned in lines 3 and 4, Article 7, of the Constitution of the American Malacological Union are to be the last four past-chairmen of the A.M.U. Pacific Division living in the Pacific area. This motion carried without opposition.

Speaking on behalf of the City Council of Pacific Grove, California, Mr. Andrew Sorensen offered the hospitality of his city and the facilities of Asilomar together with a standing invitation to hold any future meetings of the A.M.U. or the A.M.U.P.D. at that place.

There being no further business, the meeting was adjourned. A rising vote of thanks was extended to Chairman Smith and the officers of the Pacific Division for their part in having conducted a most successful meeting, the largest in A.M.U. history.

During the intermission which followed, Mrs. Rose Burch offered specimens of *Fissurella volcano* and the grateful recipients made their choices on the basis of fluorescent qualities of the shells, holding the box beneath the ultra-violet light used to illustrate Dr. Stohler's paper.

When the afternoon session resumed Mrs. A. T. Whelchel described briefly the recently opened Children's Museum of Fresno, California, mentioning the need for duplicate material suitable for use in such an institution. An earlier plea had been made by the secretary on behalf of Mr. Adlai B. Wheel for the Boy's Club of Syracuse, New York for material for their self-staffed museum.

WEST COAST OYSTERS, THEIR CULTURE AND THEIR ENEMIES

ANDREW SORENSEN
Pacific Grove, California

(Abstract)

Our native oyster *(Ostraea lurida* Carpenter) is practically extinct due to the introduction of a drill from Chesapeake Bay. But millions, maybe billions of years ago there lived a giant oyster in seas which occupied an area which is now the Coast Range mountains. In fossil form some of these prehistoric monsters weigh up to thirty pounds.

A promising new industry in California is the introduction and cultivation of *Ostraea gigas* Thunberg which does better here than in its native waters of northern Japan. First attempts at transplanting failed when huge bat stingrays ate the spat. Now in suitable bays from San Diego to Washington enclosures are fenced off by six foot stakes set close together to keep out the rays. On bottom with not too much eelgrass young oysters are planted in large numbers (26,500 cases imported in 1955) and grow so rapidly that in eighteen months they are from four to six inches long. At the end of two years they are harvested and the area seeded again. I show you eighteen large oysters ten to twelve inches long; these are from a

second seeding in Morro Bay, probably overlooked in the first harvest. They cannot be more than four years old.

Mr. Sorensen prefaced his paper with a brief resumè of early days, mentioning that he has been a resident of California since 1885.

He explained that the giant fossil oysters on display had been collected by his friend and colleague, John Strohbeen. "John has more hobbies than he has fingers and toes. He has collected nearly all of the species of Mexican marine mollusks from Punta Peñasco to five hundred miles south. In the mountains and the desert he has collected thousands of butterflies and moths, some of which bear his name."

The eighteen huge Japanese oysters were offered as specimens to as many eager takers.

CYPRAEA CAPUT-DRACONIS AND OTHER SHELLS OF EASTER ISLAND

Paul H. Steele
Sacramento Shell Club

(Abstract)

Easter Island is the only known habitat of *Cypraea caput-draconis* Melville. It is a common shell there. Average length is 27 mm with extremes of 17 mm and 45 mm. 73 species of shells have been taken at Easter Island. They include 3 land and 70 marine; of the marines we have 60 gastropods, 9 pelecypods and one chiton.

Several Riker mounts of the shells under discussion were put on exhibit following completion of Mr. Steele's paper, and he distributed boxed pairs of *Terebra vinosa* Hinds (from Easter Island) to his audience.

Jacobson: "Did you receive land shells too?" Steele: "No; I understand there are only three species to be found there. I did get *Melampus* in the lot, however." Parodiz: "I've seen several specimens of *Cypraea caput-draconis* from Juan Fernandez Island." Steele: "I've read reports from there but didn't see that species listed." Jacobson: "Isn't it true that soon there is to be an airlines base on Easter Island?" Steele: "Yes, it's under construction. And by the way, Heyerdahl (of Kon Tiki fame) spent six months there recently."

THE EFFECT OF THE WHITE'S POINT SEWER OUTFALL ON MARINE LIFE

John E. Fitch

(Abstract)

Wastes of various kinds enter the Pacific Ocean by direct discharge from coastal municipalities and industries, through tributary streams, and through offshore dumping generally from seagoing vessels. Included are raw and partially treated municipal sewage, industrial wastes, and sediment loads.

Nearly 70 percent of all wastes of Californian living end up in the Pacific Ocean. Nearly 100 percent of all the wastes from San Diego, Los Angeles, and Orange counties end up in the ocean and most of the present outfalls for these three counties are now either inadequate or in the process of being enlarged.

There are a number of direct and indirect ways in which mollusks may be affected by pollution:

1. They may be killed outright either by toxic substances or by smothering.
2. Pollution may kill the plant or animal life upon which they normally feed, thus depriving them of nourishment. Destruction of kelp beds unquestionably results in the death of a multitude of plant feeding mollusks.
3. Certain chemicals, even in minute quantities, have been known to affect the palatability of clams, mussels and other edible mollusks so as to render them unfit for consumption.
4. The negative reaction of mollusks toward badly polluted water may tend to drive those animals capable of locomotion from the area.
5. Higher bacterial concentrations in polluted waters subject mollusks to a high incidence of disease and parasitism. Where this involves man and edible mollusks there have been many instances of typhoid, dysentery, cholera, and assorted parasitic round and flatworms.
6. More desirable natural populations, frequently either driven off or killed, are replaced by less desirable scavenging populations.

In recent years Californian marine mollusks have variously been affected by all of these factors.

At our present rate of population and industrial expansion, unless some drastic and unprecedented action is taken to reduce and abate pollution, our marine molluscan fauna could be reduced, before the passing of too many years, to a few pollution tolerant species.

Specimens of stunted and eroded Haliotidae were passed about to illustrate the result of present conditions in the Bay area.

Jacobson: "New York City, which in the past grew as rapidly as is Los Angeles at the present time, faced the same problems. Work on the pollution problem has been going on for a long time and I am convinced that in a fifty mile area around the city nothing has really disappeared. If something is killed off at one place it multiplies in another." Fitch: "But New York has a large river to carry waste out to the open sea. Too, technology has 'improved' waste products, causing them to be ever more toxic, especially industrial waste." Stohler: "In San Francisco Bay we find new things coming, and most of the old ones stay. Still, the overall situation *is* alarming." Talmadge: "Are these (*Haliotis*) shells infected inside as well as eroded outside?" Fitch: "I think the outer erosion is killing them before they can be contaminated otherwise." Smith: "I am sorry to hear this report; White's Point was a favorite collecting area of mine."

STUDIES ON POMATIOPSIS SHELLS IN MICHIGAN

HENRY VAN DER SCHALIE and DEE DUNDEE
University of Michigan

Distribution and ecology charts were projected to illustrate this paper.

(Abstract)

In recent years a series of field and laboratory investigations were undertaken in the Museum of Zoology, University of Michigan, on the biology of two local species of *Pomatiopsis.* The distribution, ecology and seasonal life history were considered in a previous report (H. van der Schalie and D. S. Dundee; Trans. Amer. Micros. Soc., 74: 119-133, 1955). This investigation was concerned largely with the anatomy of the several organs and organ systems. It was found that the general aspects of the major systems of *P. cincinnatiensis* were similar to those of *P. lapidaria* as reported by D. S. Dundee (in press). Even though the structure and topography of the organs of both species are alike, the names applied to some organs, especially in the reproductive system, must be considered tentative because their functions are not well enough understood and hence the names applied to them have little meaning. The animal appears to be without a gonopericardial duct as found in stenoglossan prosobranchs by Fretter (1941). In the female reproductive tract the eggs were found in the ovary as far down as the pallial oviduct but they were never seen in the pallial oviduct itself in any of the animals sectioned. In general, while *P. cincinnatiensis* shares many anatomical features with Hydrobiids, it seems to be sufficiently distinctive to support the recommendation by E. G. Berry (1943) that *Pomatiopsis* be placed in a family by itself.

PLAN FOR A COLLECTOR'S GUIDE TO THE MARINE GASTROPODS AND PELECYPODS OF THE PANAMIC PROVINCE

GRACE P. JOHNSON, Stanford University
Read by MYRA KEEN

(Abstract)

To fill a continuing need for a convenient handbook on Panamic mollusks, a semi-popular work is being prepared. The plan is to give brief discussion of each family covered, short descriptions of the species most likely to be found by the collector—using keys if the species in any family are numerous—and to illustrate most of the forms mentioned. Thus far, the text on 24 families has been written. The figures, yet to be made, will probably be original photographs in the main, some of them in color.

An introductory chapter will stress the ecologic importance of the area.

This was the final paper of the afternoon; a brief hour afforded relaxation before the evening meal which was the annual dinner. Covers had been laid for 122 in the hotel's beautiful Mississippi Room and the members of the Conchological Club of Southern California had decorated the several long tables. Place settings were marked by amusing "cork head" figures and wicker cornucopias filled with what appeared to be rocks but was in reality candy. The head table was further adorned with flowers tastefully arranged in shell vases, the work of Master Gary Hall, age fourteen. Many persons who had been unable to attend the daily lecture sessions were on hand to enjoy a most delicious meal.

Later while the tables were being cleared, Mr. Karl Jacobson was called upon to describe the highlights of the recent shell auction sponsored by the Philadelphia Shell Club in June of this year. Mr. Jacobson spoke with authority since he had been the auctioneer; as he told of the success of the auction (a revival of a popular practice of the nineteenth century) members of other shell clubs seemed to be making mental notes. We may expect to hear of other ventures into this new old field.

The scheduled speaker of the evening was Dr. Albert R. Mead of the University of Arizona, recently appointed head of the Department of Zoology and with the added distinction of having recently won a new automobile. Dr. Mead and his family had met with delays so had been late in arriving at the meeting, and he was in semi-crippled condition, having broken a bone in his foot. He spent the first few moments of his address in putting down a rumor which he claimed had mushroomed around the afore-mentioned circumstances. (For the record: Dr. Mead's injury was NOT sustained when the Chairman of the Board of Directors stamped on his foot after he had accepted the new car as a bribe, then refused the offered post as head of the zoology department!) This having been cleared up, he settled into serious vein and spoke for half an hour on a most interesting subject:

A PROGNOSIS IN THE MOLLUSCAN CONTROL PROGRAM

Albert R. Mead
University of Arizona

(Dr. Mead's talk appears in *Nautilus,* Vol. 70, Number 2 under the title ... *Predators need defending.)*

A very full day was then concluded in most enjoyable fashion as two delegates from the Hawaiian Malacological Society, Messrs. Summers and Souder, entertained with a series of beautiful Kodachromes. The former offered views of some of the 137 species and varieties of Cypraeidae in his collection. The rarer species shown included *Cypraea ostergaardi* Dall, a semi-fossil which has never been collected alive; C. *cribaria* Linne, together with two specimens of C. *c.* var. *melwardi* Iredale, one the pure white form, very rare. C. *stolida* Linne was accompanied by C. *s.* var. *brevidentata* Sowerby, and C. *talpa* Linne by C. *t.* var. *saturata* Dautzenberg. This last was a fully mature and heavily callused specimen only 26 mm in length.

Mr. Souder transported his audience from Hawaii to Kwajalein, both places being his residence during his service in the Navy, from which both he and Mr. Summers have recently been retired.

Saturday was a beautiful day weatherwise, as indeed was every day while the meeting was in progress. In a chartered bus and private cars seventy-five persons made the nineteen mile trip up the coast to Scripps Institution of Oceanography at La Jolla. The early hours were spent touring this world-famous institution which has been in operation since 1909; from it have come many of the world's great oceanographers. According to Dr. Carl Hubbs of Scripps, who conducted the tour, it is still growing, always crowded. Work is carried on in diverse fields. Dr. Hubbs himself is currently interested in temperature problems in the Gulf of California, correlating the fluctuating populations of marine life with his studies; "I'm hoping to have a mollusk survey to tie in," he concluded.

Another phase of the work going on at Scripps is research on soil formation. One problem in this field is the question of the factor which caused an organism to preserve as fossil while others of the same type disintegrated.

Ancient human remains are being studied in conjunction with the charcoal layers of Lake LaConte, a prehistoric pluvial lake which at one time covered the area now known as Coachilla Valley (California). This work may bring about a new conception in measuring evolution in terms of geologic time.

After exhibiting a multitude of jars of specimens used in research, Dr. Hubbs conducted the party to a comfortable auditorium in the new building of which Scripps is justly proud. There a rapt audience was transported via colored motion picture down eighty feet to the ocean floor to witness the mating of the opal squid, *Loligo opalescens*. In unbelievable numbers these phantom-like animals darted and plunged as they deposited fertilized eggs by the million in a common pile at the head of a submarine canyon directly in front of the Institution. The two staring eyes seemed to convey reproach at this intrusion on their privacy as each squid swept by the camera, but it was all in the interest of science and a beautiful spectacle as well.

Since it had been omitted from a crowded schedule one final paper was heard at this time:

PTEROPOD MOLLUSKS FROM THE CARIBBEAN AND THE PHILIPPINES

ARTHUR D. HOWARD, Rivera, California
Read by JOHN Q. BURCH

(Abstract)

Pteropods in bottom siftings from two dredge hauls made by the U. S. Bureau of Fisheries Steamer "Albatross" are reported on, with identification of species. The first of these hauls was made in 687 fathoms in the vicinity of St. Kitts, Leeward Islands (Station 2751, November 28, 1887); the second, in 327 fathoms off Arena Point, Ragay Gulf, Luzon, Philippine Islands (Station 5385, March 9, 1909).

The general distribution of pteropod mollusks in geologic time and the methods of collecting Recent species is discussed.

This paper was illustrated by Kodachrome slides of the nine species of pteropods taken in the two hauls.

A display of recent and fossil shells from the Gulf of Mexico had been arranged in the library on the second floor and there Dr. Robert H. Parker explained briefly the work he is doing on a grant from the petroleum industry. Working in the Gulf from Mobile Bay to Pt. Isabel, Texas, he has taken countless sediment samples to be screened for organic matter both living and dead, chemically analyzed and otherwise tested. Dr. Parker explained that certain faunal characteristics of a given area may in the end be useful to the oil industry; much of the work is theoretical but it pays off often enough to be profitable.

In connection with this work, new species have been discovered while old ones turn up in new places. "It all ties in, and it's my job to try to correlate our findings and interpret them in terms of benefit to the petroleum industry. Too, Emerson and I am compiling a complete catalogue of the mollusks of the Gulf of Mexico, including ecological data and an extensive synonomy."

After inspecting the material which had been given added interest by Dr. Parker's talk, the delegates were called back to the auditorium for the last time, there to hear the twenty-second annual meeting brought to a formal close by retiring president Allyn G. Smith.

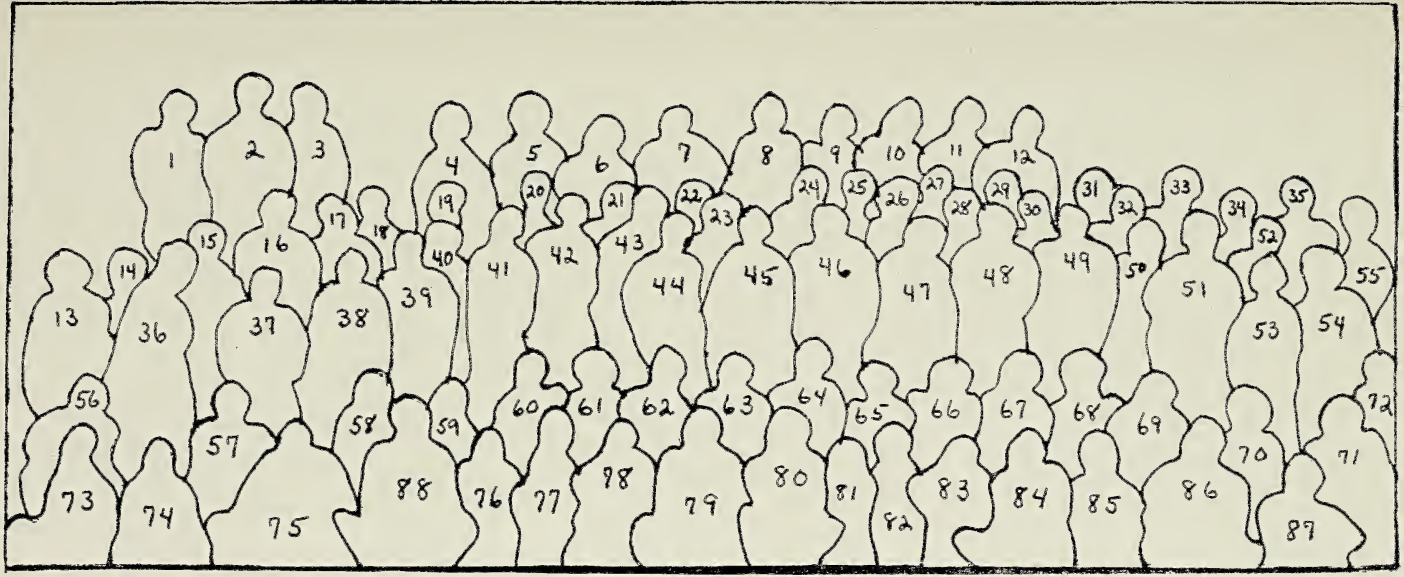
It was with the familiar twinge of regret that friends bade one another goodbye, in most cases for another year. By one o'clock all had departed, most of the Californians to go directly home while some of the easterners left for a quick trip across the border to sample collecting in Mexico. Many promises were made to meet next year in New Haven; if all are kept the 1957 meeting should be at least as well attended by western members as was this one by those from the East.

MARGARET C. TESKEY, *Secretary*
American Malacological Union

THE TWENTY-THIRD ANNUAL MEETING

This meeting will be held July 16-19, 1957 at Yale University, New Haven, Connecticut, at which time the American Malacological Union will be the guest of Mr. Percy Morris and the Connecticut Shell Club. A detailed notice will be mailed to members in ample time to adjust vacation schedules to include this event.

A.M.U. DELEGATES AT THE SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIFORNIA



1. Gilbert Grau, 2. John Souder, 3, David Becraft, 4. Robert Talmadge, 5. Mrs. Ray Summers, 6. Mrs. Z. W. Craine, 7. Carl Hubbs, 8. Leo Hertlein, 9. John Q. Burch, 10. John Strobeen, 11. Edwin Fobes, 12. Merton Hinshaw, 13. Mrs. Lucille Zellers, 14. Ralph Bormann, 15. Ray Summers, 16. Paul Steele, 17. Mrs. Ralph Bormann, 19. Carl Thomas, 20. E. Laurence Palmer, 21. Henry van der Schalie, 22. Mrs. John Strobeen, 23. Mrs. Guy Phelps, 24. Myra Keen, 25. Arthur Payen, 26. Harriet Thompson, 27. Harry Turver, 28. Bernice Leland, 29. William Emerson, 30. Mrs. Edwin Fobes, 31. Edwin Allison, 32. Mrs. Anthony D'Attilio, 33. Ralph Jackson, 34. Mrs. Ralph Jackson, 35. P. Turner, 36. Maxwell Smith, 37. Mrs. Crawford Cate, 38. Mrs. R. H. Archerd, 39. Jens Ostergaard, 40. Mrs. Phil Spicer, 41. Jessie Shelton, 42. Mrs. Carrie Matzen, 43. Mrs. Emery Chace, 45. Mrs. A. T. Whelchel, 46. Ruth Coats, 47. Florence LaFayette, 48. Mrs. John Q. Burch, 49. Wendell Gregg, 50. Letha Allen, 51. Anthony D'Attilio, 52. M. Karl Jacobson, 53. Mrs. M. K. Jacobson, 54. Sandra D'Attilio, 55. Mrs. P. Turner, 56. Crawford Cate, 57. Katura Oyama, 58. Mrs. E. P. Baker, 59. Mrs. Meade French, 60. Evelyn Wilson, 61. Marianna Paulson, 62. Irette Larson, 63. Mary Long, 64. Margaret Teskey, 65. Mrs. Albert Mead, 66. Helen Burton, 67. Mrs. E. Laurence Palmer, 68. Mrs. Harry Turver, 69. Andrew Sorensen, 70. Phil Spicer, 71. Emery Chace, 72. Roscoe Stotter, 73. Diane Souder, 74. Donna Souder, 75. Robert Parker, 76. Frank Carr, 77. Mrs. Juan Parodiz, 78. Juan Parodiz, 79. George Kanakoff, 80. Albert Mead, 81. Master Mead, 82. Miss Mead, 83. Jack Bradbury, 84. Patrick Milburn, 85. John Sibert, 86. Allyn Smith, 87. Lawrence D'Attilio, 88. Edward Baker.

MEMBERS AND GUESTS ATTENDING 1956 MEETING

Mrs. Robert R. Alexander, La Mesa, California
Letha S. Allen, Baltimore, Maryland
Edwin C. Allison, Berkeley, California
Dan Anderson, Carlsbad, California
Mrs. R. H. Archerd, Berkeley, California
Dr. Joshua L. Baily, Jr., San Diego, California
Mr. and Mrs. Edward P. Baker, Downey, California
David T. Becraft, San Diego, California
Dr. S. Stillman Berry, Redlands, California
Mr. and Mrs. Ralph Bormann, Long Beach, California
Jack Bradbury, Balboa, California
Mr. and Mrs. John Q. Burch, Los Angeles, California
Howard S. Burnett, Loma Linda, California
Helen A. Burton, Oakland, California
Frank B. Carr, Asheville, North Carolina
Mr. and Mrs. Crawford N. Cate, Los Angeles, California
Mr. and Mrs. Emery P. Chace, San Diego, California
Mrs. Emma W. Coats, Carlsbad, California
Ruth E. Coats, Carlsbad, California
Mrs. Ruth A. Craine, Norwich, New York
Mr. and Mrs. Anthony D'Attilio, Valley Stream, New York
Lawrence D'Attilio, Valley Stream, New York
Sandra D'Attilio, Valley Stream, New York
Mrs. Esther C. Elliott, Carlsbad, California
Dr. William K. Emerson, New York City
Bessie Falconer, Los Angeles, California
Clyde L. Field, National City, California
Mrs. Barbara Fifield, Coronado, California
John E. Fitch, San Pedro, California
Mr. and Mrs. Howard L. Fletcher, Redlands, California
M. Sgt. and Mrs. Edwin L. Fobes, Hamilton AFB, California
Mr. and Mrs. Paul M. Foster, Loma Linda, California
Mr. and Mrs. Meade French, San Pedro, California
Gilbert Grau, Hollywood, California
Wendell O. Gregg, M.D., Los Angeles, California
Dr. Bruce W. Halstead, Redlands, California
Dr. Leo G. Hertlein, San Francisco, California
Clara D. Hewitt, Santa Ana, California
Merton E. Hinshaw, Pacific Grove, California
Mrs. George B. Hunt, Berkeley, California
Dr. Dale Inaba, Riverside, California
Mr. and Mrs. Ralph W. Jackson, Cambridge, Maryland
Mr. and Mrs. Morris K. Jacobson, Rockaway Beach, N. Y.
George P. Kanakoff, Los Angeles, California
Dr. Myra Keen, Stanford, California
H. L. Kroll, Nahcotta, Washington
Florence E. LaFayette, Carmichael, California
Irette Larson, Fresno, California
Bernice Leland, Eugene, Oregon
Mary E. Long, Sonora, California

Mrs. Beatrice McEachern, San Fernando, California
Mrs. Carrie Matzen, Escondido, California
Dr. and Mrs. Albert R. Mead, Tucson, Arizona
Patrick Melburn, Corona Del Mar, California
E. Dean Milow, San Diego, California
Dr. Joseph P. E. Morrison, Falls Church, Virginia
Michael Morrison, Falls Church, Virginia
Roy L. Morrison, San Diego, California
William E. Naylor, San Diego, California
Jens M. Ostergaard, Atherton, California
Katura Oyama, Tokyo, Japan
Dr. and Mrs. E. Laurence Palmer, Ithaca, New York
Dr. Robert H. Parker, La Jolla, California
Dr. and Mrs. Juan J. Parodiz, Pittsburgh, Pennsylvania
Mrs. Marianna Paulson, Berkeley, California
Arthur Payen, Sacramento, California
Mrs. Guy W. Phelps, Del Ray Beach, Florida
Dr. Ariel A. Roth, Loma Linda, California
Richard F. Shaw, San Diego, California
Jessie C. Shelton, Escondido, California
Charlotte M. Shuman, Seal Beach, California
Katherine M. Shuman, Seal Beach, California
John Sibert, Balboa Island, California
Allyn G. Smith, Berkeley, California
Dr. Maxwell Smith, Ft. Myers, Florida
Andrew Sorensen, Pacific Grove, California
Mr. and Mrs. John W. Souder, San Diego, California
Dr. and Mrs. Phil Spicer, Centralia, Washington
Paul H. Steele, Sacramento, California
Armita L. Stocker, Laguna Beach, California
Dr. Rudolf Stohler, Berkeley, California
Roscoe O. Stotter, Imperial Beach, California
Mr. and Mrs. John P. Strohbeen, Santa Cruz, California
Mr. and Mrs. Ray H. Summers, San Rafael, California
Robert R. Talmadge, Willow Creek, California
Mrs. Margaret C. Teskey, Marinette, Wisconsin
Carl I. Thomas, Orange, California
Harriet W. Thomson, Eugene, Oregon
Mrs. Doris L. Turner, San Diego, California
Mr. and Mrs. Harry R. Turver, South Gate, California
Dr. Henry van der Schalie, Ann Arbor, Michigan
Mr. and Mrs. Munroe L. Walton, Glendale, California
Mrs. A. T. Whelchel, Fresno, California
Ernest N. Wilcox, San Luis Obispo, California
Mrs. Jean Wilkins, Downey, California
Jeanne Williams, San Diego, California
Evelyn C. Wilson, Oakland, California
Dr. Lois Chi Wong, Loma Linda, California
Mrs. Lucille Zellers, El Cerrito, California

CONSTITUTION OF
THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the by-laws. Life membership may be purchased for the equivalent of twenty years' annual dues, with no further annual dues required. Honorary membership may be bestowed by an unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.
4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, Publications Editor, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact by-laws that interpret this Constitution, and such by-laws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.

BY-LAWS

1. The annual dues shall be two dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.
2. The President shall be empowered to appoint a nominating committee and such other standing and special committees as may be deemed advisable.
3. A nominating committee shall consist of not less than three nor more than five members of the Council, exclusive of existing officers. The duties of this committee shall be to prepare a list of nominations of officers and councillors-at-large for the ensuing year to be elected in accordance with Article 4 of the Constitution, this list to be presented at a business meeting of the Council held during an annual meeting of the American Malacological Union. No member shall be nominated for any office without his or her prior notification and consent.
4. A quorum of five council members is necessary before business may be transacted at any meeting of the Executive Council.

THE AMERICAN MALACOLOGICAL UNION
EXECUTIVE COUNCIL
1956-1957

☆

Officers

President	Ruth D. Turner
Vice-President	Aurele LaRocque
Second Vice-President	(Chairman, A.M.U.P.) Edward P. Baker
Secretary-Treasurer	Margaret C. Teskey
Publications Editor	George M. Moore

☆

Councillors-at-Large

Charlotte Dawley
Leo G. Hertlein
Eugene H. Schmeck
Germaine L. Warmke

☆

Past Presidents — Permanent Council Members

Henry A. Pilsbry (1931-1932)
Paul Bartsch (1933)
William J. Clench (1935)
Joshua L. Baily, Jr. (1937)
Maxwell Smith (1939)
Horace B. Baker (1940)
Harald A. Rehder (1941)
Louise M. Perry (1943-1945)
Henry van der Schalie (1946-1947)
Myra Keen (1948)
Elmer G. Berry (1949)
Fritz Haas (1950)
J. P. E. Morrison (1951)
Jeanne S. Schwengel (1952)
A. Byron Leonard (1953)
Joseph C. Bequaert (1954)
Morris K. Jacobson (1955)
Allyn G. Smith (1956)

☆

PACIFIC DIVISION

Officers

Chairman	Edward P. Baker
Vice-Chairman	Albert M. Mead
Secretary-Treasurer	Ruth E. Coats

OUR MEMBER CLUBS

THE NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Lucille Zellers, Secretary: We meet in Room 4005, Life Sciences Building, University of California, on the first Tuesday of each month at 8:00 P. M. The membership of 62 consists of beginners as well as scientific conchologists and malacologists. Dr. Rudolf Stohler of the Department of Zoology at the University is president of the club.

Many interesting subjects and slides were presented during the year: Ray Summers, Cypraea; Allyn G. Smith, Chitons of the West Coast from Alaska to San Diego; Robert Robertson, Caribbean Mollusks and Their Authors; Miss Winona Bethume, Tunicates; Earl Barnawell, A Study of Chiton Distribution in the San Francisco Bay; Edward Allison, A Conducted Tour of the Paleontology Department of the University of California, presenting recent molluscs and fossil forms; Dr. Zack Arnold, Beach Combing with a Microscope, illustrated by living forminifera; Dr. Stohler, Random Thoughts of a Field Collector; Allyn Smith, a report on the A.M.U. Convention and comments on the papers presented; Charles A. Stasek, A Brief Resume of Observations at Bodega Bay in the Summer of 1956; Edward Paulson, Distribution of Molluscan Fauna of San Francisco Bay. Nine members attended the A.M.U. Convention in San Diego in July.

Several members gave brief summaries of collecting trips, and three study groups were organized under the direction of Dr. Rudolf Stohler. As a regular part of each meeting, one member brought 25 named shells while another gave a ten minute talk, "How I Became Interested in Shells."

THE PHILADELPHIA SHELL CLUB, Mary S. Abbott, Secretary: The club held nine regular meetings and one field trip during the 1956 season. The membership which was 44 at the first meeting in September, 1955 has increased to 94 regular, 3 junior and 17 corresponding members.

The programs were varied and interesting, ranging from illustrated talks on collecting trips to a shell auction which netted a fine sum for our young treasury. In February Mr. Morris K. Jacobson, former president of the A.M.U., honored us with a visit and a talk on Cuban land shells. At each meeting the Club Historian gave a short resume of one or two recent publications, and at six meetings members gave short talks on the shell-of-the-month. The field trip to the home of a member at Wildwood, New Jersey, was an appropriate finale to a most successful year. Thirty-nine members and guests enjoyed a savory luncheon prepared by our "chef," John D. Parker, then collected on the nearby beach, bringing in a total of 20 species of mollusks.

Vol. I, number 1 of the Proceedings of the Philadelphia Shell Club was published on September 20, 1956 and may be obtained for $1.00 from the secretary, Mrs. Mary S. Abbott, 40 Woodale Road, Philadelphia 18.

Officers for the next year are: President, R. Tucker Abbott; Vice-president, Charles B. Wurtz; Secretary-Treasurer, Mary S. Abbott; Councillors, Anne Harbison, Winifred Zerne; Honorary Life President, Henry A. Pilsbry.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: Officers for 1956: Mrs. Eugene Wilkins, President; Dr. Frank Parkhurst, Vice-president and Program Chairman; Ralph Bormann, Secretary-Treasurer.

Nine regular meetings were held during the past year, with a shell auction and watermelon party in August, and the Christmas party and exchange of gifts held in the homes of members. Several members attended the meeting of the American Malacological Union in San Diego.

The Club project for the coming year is to be a small directory, listing names of members and friends and other shell clubs about the country.

THE CONNECTICUT SHELL CLUB, Gertrude Thompson, Secretary: 1956 was a busy year. At the January meeting we were privileged to see the new cases of invertebrates completed at Yale University which illustrate the Geologic Time Scale; this is a beautifully mounted display which will be invaluable to students. In February Dr. William J. Clench of Harvard spoke on Tropical Land Snails, and in March our president, Mr. Percy Morris, was a guest speaker at the New York Shell Club. Our fellow-member Earl Reed displayed enlarged photographs of shells which brought out marvelous patterns. In April Dr. Ruth D. Turner of the Museum of Comparative Zoology gave us a fine talk on Shell Collecting in New England, with brief biographical sketches of the early authorities.

The summer months were highlighted by the annual meeting, by the resolution to invite the American Malacological Union to meet in New Haven in 1957, and a trip to Somers (Connecticut) to see an outstanding collection of shells.

We were informed in September that our invitation had been accepted by the A.M.U. so the meetings for the next few months will be taken up in formulating plans for that important occasion. Also scheduled is a talk on Collecting in the Florida Keys by one of our members, and an illustrated lecture by Mr. Alan Kohn, recently returned from Hawaii where he spent a year working in the Zoological Marine Laboratory.

THE GREATER SAINT LOUIS SHELL CLUB, Vaunita B. Haid, Secretary: The Club (which celebrated its second anniversary this past spring) came of age at the January meeting, and elected officers and determined a regular format of study and discussion. Club meetings are held on the first Tuesday of each month, at which time study is conducted by typed Family Sheets which list genus name, book and illustration reference from all books owned by our members. All shells of the family being studied are displayed for visual study and discussion from various reference books.

A most interesting highlight of many of the meetings are consignments of shells sent by various dealers from all over the world for inspection and study.

During the past year several of our members have made trips to the Texas coast, Florida, the Philippines and Japan; bringing back many interesting specimens and much shell lore.

The most interesting activity of the Club during the past year was the setting up of a public display of domestic shells in Forest Park Pavilion, and a world-wide collection at the St. Louis Academy of Science.

We extend a cordial invitation to anyone passing through St. Louis to inspect these two collections, as well as to attend our monthly Shell Club meetings.

NEW YORK SHELL CLUB, Edward F. Cowles, Jr., Secretary: Our present rate of growth will give us about eighty members on our eighth anniversary, February 1957. Visitors, always welcome, will find us at the American Museum of Natural History on the first Sunday afternoons, January to May, and the last Sundays, September to November (but a week later if a major holiday interferes).

Two meetings of our 1955-1956 season were enhanced by distinguished guest speakers: Mr. Percy A. Morris, of Yale's Peabody Museum, presented a talk illustrated with slides demonstrating relationships between fossil and recent form of various mollusks; and Mr. John D. Parker, of the Philadelphia Academy of Natural Sciences, showed us his films of a collecting expedition in the Cayman Islands.

A typical meeting will include a discussion of new publications, a paper concerning taxonomy of local mollusks, a slide-illustrated description of some member's trip to a good collecting locality, an exhibit of rare specimens, distribution of shells contributed by members, and informal "swapping." The most signficant papers are digested in the Club "Notes," which also presents series of articles on local shells, rare items from members' collections, book reviews, etc.

The following officers were re-elected last February: President, Mr. Anthony D'Attilio; Vice-President and Treasurer, Miss Mathilde Weingartner; Corresponding Secretary, Mrs. Josephine Wichern; Recording Secretary, Mr. Edward F. Cowles, Jr.

ST. PETERSBURG SHELL CLUB, Gertrude E. Brakefield, Secretary: The club meets in the Assembly Room of the City Hall on the second and fourth Friday of the month. A speaker, well versed in conchology, is appointed to give a talk on a family of shells, and whenever possible these talks are illustrated by color slides or movies. A round table discussion is then held.

Our field trips under the supervision of Mr. Alger P. Blaine are of special interest to the beginner, for the process of removing the animal and cleaning the shell is carefully explained. These trips are held twice each month during the winter season, tides and weather permitting. A Christmas party is held at the last meeting in December at which time gift wrapped shells are exchanged.

The 1956 Shell Show was held at the Treasure Island Auditorium February 29th through March 5th and afforded one of the finest displays of Florida shells together with exotic specimens from all over the world. The Smithsonian Institution Award for the most scientific presentation was given to Mr. and Mrs. Joseph E. Conkling for their recently collected shells from the Panama Canal Zone. The 1957 Shell Show will be held February 27th through March 4th at the Treasure Island Auditorium.

The annual club picnic was held April 3rd on Mullet Key and included a trip through historic Fort Desota.

Officers for the coming year: President, Mrs. Nellie Coleman; 1st Vice-president, Murray E. Reed; 2nd Vice-president, Miss Gertrude Weber; Treasurer, Ernest Klein; Recording Secretary, Mrs. Barbara Steger; Corresponding Secretary, Mrs. Gertrude E. Brakefield.

THE HAWAIIAN MALACOLOGICAL SOCIETY, Elizabeth Wilson, Corresponding Secretary: Our permanent address is 2777 Kalakaua Avenue, Honolulu 15, Hawaii, U.S.A. We meet throughout the year at 7:30 P. M. on the first Wednesday of each month at the Aquarium. 1956 was the most successful year in the Society's history, with over 160 members and $300 in the treasury.

Shell auctions were held in April and October, both highly successful. The Society is seriously considering putting on a Shell Fair during Aloha Week in 1957, the festivity which annually ushers in the Fall tourist season. Definite dates have not been set, but it will probably be in mid-October.

As chronicled last year, the use of aqua-lungs and similar diving apparatus has revolutionized the collecting here. While Hawaii has always had a high proportion of skin divers who use only mask and fins the aqua-lung users have an advantage in time under water and depth which is paying off. Many a collection now can boast of specimens taken alive which formerly were represented by beach specimens; in addition much is being learned as to molluscan habits, depths at which a species thrives, environment, etc. Many shells have thus been taken out of the rare category, such as *Cypraea granulata, C. scurra, C. sulcidentata; Mitra tesselata, M. emersoni, M. newcombi, M. papalis; Conus lithoglyphus, C. pertusus* and many others.

The Society's paper, "The Hawaiian Shell News," concluded Vol. IV with the October 1956 issue. It is a 10 to 12 page mimeographed bulletin of shell news of interest to collectors everywhere, available to members.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, Florence Thurlow, Secretary: The club has 60 paid members, about the same as last year. Meetings are held the first Tuesday of each month at the southeast entrance of the Los Angeles County Museum (ground floor) at 7:30 P.M. The following officers officiated in 1956: President, John E. Fitch; Vice-president, N. T. Mattox; Secretary, Florence Thurlow; Treasurer, Mrs. Donald Brooks.

Reports on collecting, new publications and changes in nomenclature were made, as well as the following scheduled program: "A Report on the Family Mytilidae," Tron Soot-Ryen; Allan Hancock Pacific Expedition, Vol. 20, number 1, reviewed by Emery Chace; "Facts Concerning Pollution Along the Southern California Coast," John E. Fitch; "A Report on the Family Arcidae," Helen Rost; Allan Hancock Expedition, Vol. 20, number 2, reviewed by Dr. N. T. Mattox; "Marine Life at Cholla Bay, Mexico," John Tyler and Frances Kramer, a running commentary on beautiful color-movies; "Tagging and Transplanting Abalone," Keith Cox, illustrated by a motion picture; "Collecting in the Area of the Tres Marias Islands," the expedition sponsored by Pat Doheny and reported by Jens Knudsen; "Quantitative Survey of the Benthos of Mollusca, San Pedro Basin," Donald Wilson; Reports on the A.M.U. Convention by members who attended, and pictures by Crawford Cate; "Feeding of *Conus striatus* and *Conus catus,*" a film by Alan J. Kohn; "Shell Characters of Value in Classification," John Q. Burch who illustrated with specimens.

Field trips were made to Carpenteria Reef, to collect fossils in upper Newport Bay, to San Matea Point near San Diego and to San Felipe, Mexico. Finally, and as in the past, John Q. Burch edited and published "The Minutes of the Conchological Club of Southern California," a most important scientific contribution to those concerned with conchology.

THE PACIFIC SHELL CLUB, Milton W. Zim, Past-President: The Pacific Shell Club of Los Angeles has concluded its thirteenth year, has a membership of over one hundred. Dr. Howard R. Hill is the sponsor and the officers for the year just concluded were: Milton W. Zim, president; Ralph S. Hall, vice-president; Florence Thurlow, secretary; Isaac Cowgill, treasurer. The meetings included a field trip, a Christmas party with two marine films, a colored film and a talk by John Tyler on "Marine Life in Cholla Bay," a talk by Crawford N. Cate on *Forreria belcheri* and a talk by Milton W. Zim on *Mytilus edulis,* and a talk by Milton and Natalie Zim on their shelling experiences on the west coast of Mexico, this illustrated by Kodachrome slides. The year concluded with the annual picnic lunch and election; the following officers will serve in 1956-57: Crawford N. Cate, president; Dr. Homer King, vice-president; Mrs. E. Williams, secretary; Isaac Cowgill, treasurer.

The new president has announced the following agenda for the coming year: Dr. Homer King will speak on "The Moon and its Effect on the Tides" and Carrol Wakeman, Testing Engineer for Los Angeles Harbor will discuss "The Economic Significance of Marine Borers in L. A. Harbor" at the October meeting. In November Mr. and Mrs. Lawrence Carter will illustrate with colored slides their talk on "Years Traveling in the United States and Mexico." John E. Fitch of the California State Fisheries Laboratory will speak on "West Coast Bivalves" in January. The remainder of the year will be spent on the study of pelecypods.

The club meets at the Los Angeles County Museum on the third Sunday of each month, October through May, and extends a cordial invitation to all A.M.U. members, their families and friends to attend our meetings whenever possible. Children are always welcome, fine shells are given as door prizes and duplicate shells donated by members are often distributed.

BOSTON MALACOLOGICAL CLUB, Dorothy Culligan, Secretary: The club met on the first Tuesday of each month, October through May, 1956, first in the Massachusetts Audubon Library, and from February on at the Museum of Comparative Zoology, Harvard University.

The following program was enjoyed: Report of summer activities by the members; "History of Shell Clubs in the United States," by Dr. R. Tucker Abbott of Philadelphia; "Comparison of West African and West Indian Marine Mollusks," by Dr. Joseph C. Bequaert; "Thomas Say and the New Harmony Movement," by Mr. Richard I. Johnson; "Exploits With Clam Fisheries," by Dr. Henry Russell; "Climbing in the Canadian Rockies," by Mr. Thomas Richardson; "New England Shells," by Dr. Ruth D. Turner. The club outing was held in June at the Cape Cod Shellfish Corporation, Barnstable, Mass.

The following officers were elected for 1956-1957: President, Mr. Richard I. Johnson; Vice-President, Dr. Henry Russell; Conchological Recorder, Dr. Joseph C. Bequaert; Secretary-Treasurer, Miss Dorothy Culligan; Executive Committee, Dr. Austin W. Cheever and Dr. Edward Michelson.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Catherine Bradley, Secretary: The activities of the Buffalo club began early in the year with our annual banquet at a popular downtown restaurant. Fall, Winter and Spring meetings are held at the Buffalo Museum of Science, while in the summer we meet at the homes of members, usually the occasion for a picnic . . . although the cold and wet summer just past frequently caused us to move the picnic indoors.

We have enjoyed talks on the trips made by several of our members, usually highlighted by Kodachromes; those of Mexico and Bermuda were especially interesting. We have only twenty-one members but we compensate for this small number by our great enthusiasm. Meetings are held on the third Friday evening of each month (third Saturday during the summer) and we gladly welcome visitors.

Our officers: President, Annie C. Hoffman (a charter member of the fifty-nine-year-old club!); Secretary, Catherine Bradley; Treasurer, Louise M. Becker.

Publications of the American Malacological Union

SCIENTIFIC CONTRIBUTIONS MADE FROM 1882 TO 1939
by HENRY A. PILSBRY, Sc.D. ....1940: 63 pp., $1.00

HOW TO COLLECT SHELLS....................1955; 75 pp., $1.00
(Order from American Malacological Union, c/o Buffalo Museum of Science, Humboldt Parkway, Buffalo 11, New York.)

ANNUAL REPORT BULLETINS, AMERICAN MALACOLOGICAL UNION. Have been issued since 1932 and sent without cost to members. Back issues may be purchased for $1.00 and (before 1950) $1.50. Order from A.M.U. secretary.

HENRY CLYDE SHETRONE
1876-1954

Dr. Shetrone, Director Emeritus of the Ohio Historical Society and the Ohio State Museum, died on November 23, 1954. He began his scientific career as an Assistant in Archeology (1913-21), served as Curator of Archeology (1922-28), and finally was appointed as Director of the Ohio State Archeological and Historical Society at the Ohio State Museum (1928-46). He was an authority on the mound builders of the Ohio Valley. His interest in shells developed primarily after his retirement. At that time, he studied shells which had accumulated from numerous excavations (sponsored by his organization) of Indian mounds in Ohio. He assembled a large collection of recent marine and fresh water shells for comparison with his archeological material. His study of recent marine shells was carried out in Florida while he collected fresh water specimens in Ohio. These collections are now deposited in the Ohio State Museum. Based partly upon these collections, he published a brief report on "Fauna of the Mound Builders" in the June issue of *Fauna* for 1948. A few months before his death, he published "Marine Shells from Ohio Pre-Columbian Burial Mounds" in the July issue of *The Nautilus* for 1954.

He had received an honorary M.A. degree from Ohio University in 1929 and an honorary Doctor of Science from Denison University in 1944. He was a Fellow of the American Association for the Advancement of Science, of the American Anthropological Association, and of the Ohio Academy of Science. He served as president of the latter institution and as a council member of the American Association of Museums. In recent years, he was a member of the American Malacological Union.

In his study of Ethno-conchology he identified ten species of marine snails from Ohio mounds which had been obtained through trade from the Gulf and Florida Coasts. He had expected to find some evidence of similar trade with the upper East and New England coastal areas, but not a trace of this could be found in his studies.

Dr. Shetrone once wrote to the writer, "My interest in the mollusks is primarily economic, but I enjoy them also for their beauty of form and color, their importance in art, architecture, design, etc., through the ages."

Ralph W. Dexter

LILLIAS F. COCKERILL
1874-1956

The many friends which this energetic woman made as she attended annual A.M.U. meetings will not be surprised to learn that at the time she was stricken by the illness which brought death in June of this year she was in the midst of making preparations to attend the San Diego meeting. She was to have borne an invitation from the people of Sanibel Island to hold the 1958 annual meeting at that famous collecting spot, and had been busy for several weeks prior to her illness making certain that the proper facilities would be available if the invitation was accepted.

Born in London, England, she came to Florida with her husband in 1926 and immediately developed an interest in shells which led to the building of an exceptionally fine collection which is now in the custody of her daughter.

She was active in civic affairs, serving as secretary of the Sanibel Community Association for twenty years; she helped to launch the annual shell exhibit and was always an enthusiastic participant. Although her greatest interest was in conchology she also collected coins and stamps, painted in oils and was an excellent nature photographer. At eighty-two she possessed a youthful spirit of adventure which sustained her until the end.

M.C.T.

PAUL P. McGINTY

1877-1956

The many friends of Mr. McGinty will be grieved to hear of his death on July 1, at his home in Ocean Ridge, Florida. He was in his 79th year.

Mr. McGinty was born in Athens, Georgia, on October 26, 1877. While still a youth he began to show an interest in the subject of natural history and succeeded in building an exceptional collection of birds' eggs from the north Georgia region. His formal education was received at the Georgia School of Technology where he studied architecture and later entered business with his father in Athens. Following his father's death he became U. S. Supervising Architect on government buildings and travelled extensively. He resigned from this position some time after his marriage to Miss Ella M. Ladue of Detroit, Michigan, and entered private business in that city.

Being partially disabled by an accidental spinal injury, he set up a winter residence in Florida in 1923, later making it his permanent home. While combing the beach adjacent to his Florida home he early became interested in conchology. A meeting with Dr. Maxwell Smith, who lived nearby, ripened into a warm friendship and further stimulated his interest in shells. Gradually he came to specialize in land shells and succeeded in building up an exceptional collection of the beautiful Florida tree snails of the genus *Liguus*. In 1930 he organized a shell collecting expedition to Cuba during which he discovered a new form of *Liguus* whch was subsequently named in his honor. Through correspondence and exchanges he gradually built up a large circle of friends, and in time the McGinty residence became a stop-over for many collectors who were always welcome.

Mr. McGinty is survived by his two sons, Paul L. and Thomas L. McGinty, with whom he lived at Ocean Ridge, near Palm Beach. As a result of his disability he was unable to do extensive collecting himself so the gathering of material as well as the technical investigations were shared by his two sons. The collection was expanded to include the Florida marine shells with special emphasis on the rarer deep-water species, and is now, without doubt, one of the most complete and valuable in existence.

Mr. McGinty's cordial and kindly nature endeared him to Florida malacologists and shell collectors, nearly all of whom he knew personally, and his passing will be sorely felt by all in the fraternity. Burial was at Athens, Georgia, in beautiful old Oconee Hill Cemetery, not far from his boyhood home.

M.C.T.

NOTES AND NEWS

On this anniversary year we are proud that 36 charter members are still with us. They are indicated (*) in the membership list on pages 41 to 52.

* * *

Item for the "It Really Happened" department: During an afternoon session at last summer's annual meeting Mrs. Rose Burch answered the telephone in the hotel lobby. The youthful voice at the other end explained that the owner had read in the morning paper that people interested in shells were planning a banquet for that evening and could anybody come? He was assured that any person with a similar interest was most welcome. "If my mother and I can't make it," the lad continued, "will you mail us the literature you're passing out?" Mrs. Burch could think of no such distribution and said so. "But," came the indignant reply, "it says right here in the *Union* that a paper will be given!"

* * *

. . . At present, there are fifteen active shell clubs in the United States. Each offers an opportunity for shell enthusiasts to gather together at frequent intervals, so that ideas and information may be exchanged. Many life-long friendships have developed among club members, and hundreds of students have kept abreast of the developments in the field of conchology through the activities of these clubs. New clubs will surely develop in other parts of the country. Indeed, there is a vital need for one in such cities as Miami, Chicago, Washington and Ann Arbor where there are many amateurs and professionals who should be availing themselves of the advantages of a shell club.

(*From "Proceedings of the Philadelphia Shell Club", volume* 1, *number* 1, 1955-56)

* * *

1956 was a banner year for anniversaries. Not only was the American Malacological Union a quarter-century old, but in August one of the founders of the organization, Dr. William J. Clench, completed thirty years with the Museum of Comparative Zoology at Cambridge, Massachusetts.

Also in August a charter and an honorary member, Dr. Paul Bartsch, celebrated his eighty-fifth birthday and his sixtieth year of association with the U. S. National Museum.

Both gentlemen were honored by their colleagues in informal celebrations and each was presented with a folio of congratulatory letters from friends all over the world.

Another anniversary occurred during the annual meeting at San Diego; on July twelfth Mr. and Mrs. John Q. Burch were honored by their fellow-delegates on occasion of their fortieth wedding anniversary.

* * *

The St. Petersburg Shell Club's annual shell show will be held at the Treasure Island auditorium February 27th to March 4th, 1957. This event attracts an ever-growing number of visitors and should not be missed by persons in any way interested in shells. This is the opportunity to view rare and beautiful shells seldom displayed anywhere, together with outstanding scientific arrangements by local and distant collectors.

ACTIVE MEMBERS

[Membership List Revised December 31, 1956]

Aarnes, Henry, 4543 Milwaukee St., Denver 16, Colo. General Interest.
Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.
*Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.
Ahern, Mrs. Thomas, 8747 Brandt, Detroit 4, Mich.
Akers, Mrs. Frank G., Box 133, Naples, Florida.
Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.
Alexander, Mrs. Robt., 8542 Lemon Ave., La Mesa, Calif.
Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.
Allen, Dr. J. Frances, Dept. of Zool., Univ. of Maryland, College Park, Md.
Allen, Lester E., 187 Argyle St., Yarmouth, Nova Scotia.
Allen, Miss Letha S., 1348 Dartmouth Ave., Baltimore 14, Md. General.
Allison, Edwin C., Dept. Paleontology, U. of Calif., Berkeley 4, Calif. Fossil, recent and mega-micro marine invertebrates.
Althaus, Kenneth, 319 E. 110th St., Los Angeles 61. No. Am. Unionidae.
Ames, Margaret Dale, 17 East 89th St., New York City.
Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.
Anderson, Col. A. S., Post Quartermaster, Ft. Campbell, Ky.
Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.
Arias, Sergio, Sociedad de Ciencias Naturales La Salle, Apartado 681, Caracas, Venezuela. All mollusks of neotropical regions.
Armstrong, Mrs. Eliot, 681 Lafayette Ave., Buffalo 22, N. Y. Collecting.
Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y
Athearn, Herbert D., R.F.D. No. 5, Cleveland, Tenn. Fresh water mollusks.
Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. Land shells.
Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.
Averre, Mrs. Wm. V., Apt. Postal 110, Limon, Costa Rica.
Awald, Clifford J.,162 Southwood Dr., Kenmore, N. Y.
Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.
Baker, E. P., 11619 Downey Ave., Downey, Calif. Exch. Pacific Coast shells.
*Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.
*Balch, Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.
Bales, Mrs. Blenn R., 149 West Main St., Circleville, O.
Ballard, Wm. Lewis, 458 Shannon Dr., S.W., Atlanta, Ga.
Bartlett, Mrs. R. D., 200 Cedar Croft Rd., Baltimore 12, Md. E. coast shells Md. to Fla.
*Bartsch, Dr. Paul, Smithsonian Institution, U. S. National Museum, Washington 25, D.C. Residence, "Lebanon," Gunston Hall Rd., Lorton, Va.
Bass, Mr. and Mrs. J. Louis, Jr., Medlin Heights Rd., Fountain City, Tenn. Murex and pectens.
Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. Exchange.
Bayer, Frederick M., Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.
Beatty, George D., R. 1, Sandusky, O. Land and f.w. mollusks of Great Lakes region.
Beck, Mrs. R. G., 422 So. Vine St., Escondido, Cal.
Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Becraft, David T., 5905 Mission Gorge Rd., San Diego, Calif.

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*Charter Member

Bolin, Velma and Bart, 6757 Lemoran, Rivera, Calif. West Coast marine gastropoda.
Bell, Miss Vashti, 528 South Erie, Wichita 16, Kansas.
Bengston, Mrs. George, 816 Colleen Ave., Waterloo, Iowa. Land, f.w., fossils.
Bequaert, Dr. Joseph C., Biology Dept., Univ. of Houston, Houston, Texas.
Berg, Dr. Clifford O., Dept. of Entomology, Cornell Univ., Ithaca, N. Y.
Berger, Mr. and Mrs. John, "Tanglewood," R. R. 3, Angola, Indiana.
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Bippus, Alvin C., Jr., 1918 Bayard Pl., Toledo 6, O. Col. Marine univalves.
Bixby, Mrs. H. M., Look See, Captiva, Florida.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Mrs. Margaret Carlson, 399 Washington St., Woburn, Mass.
Bourgeois, Miss Marie E., 3a Tiziano 35, Mixcoac D. F., Mexico.
Bradbury, Jack W., 2037 Miramar Drive, Balboa, Calif. Marine invertebrates.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Brakefield, Gertrude E., 3830 7th St., No., St. Petersburg, Fla.
Brewster, Miss Helen, 333 5th St., So., St. Petersburg 5, Fla.,
Broekel, Ray, 1051 Grove St., Jacksonville, Ill. General interest.
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Bronson, Albert B., P.O. Box 667, Agana, Guam, M. I.
Brooks, James C., Jr., 194 Riley Ave., Macon, Ga. Atlantic and Caribbean gastropods.
Brown, J. J., 502 E. 42nd St., Austin, Texas.
Brown, Mr. and Mrs. Ralph M., 2807 Pruden Drive, Fountain City, Tenn. Cones and murex.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Bruce, Anthony, 90 Doat St., Buffalo 11, N. Y. Printer.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Burch, John Bayard, Div. of Mollusks, U. of Mich., Ann Arbor, Mich.
Burch, Mr. and Mrs. John Q., 1584 W. Vernon Ave., Los Angeles 62, Cal.
Burch, Dr. Paul R., Rockville, Virginia.
Burford, D. L., 4241 Jackson Ave., Culver City, Calif. *Haliotis.*
Burke, Mrs. Clara, 2121 So. Simpson St., Philadelphia 42, Penn. School collections.
Burke, Fred, Branch, Mich. Trade and sell shells.
Burry, Mrs. Leo A., Burry's Marine Museum, Rt. 1, Box 544, Pompano Beach, Fla.
Burton, Helen A., 391 Adams St., Oakland 10, Cal.
Butler, R. B., 814 W. 5th St., Plainfield, N. J. Marines, recent and fossil.

Cabot, Robert. W., 1068 Main St., Stanford, Conn.
Cahoon, Ruth Mary, 1173 Gulfstream Ave., Sarasota, Fla. Exchange, collect.
Caribbean Shell Shop, P.O. Box 311, Sarasota, Fla. Commercial and specimen shells.
Carlson, Mrs. Margaret F., 399 Washington St., Woburn, Mass.
Carpenter, Capt. Walter N., Box 15, A.P.O. 108, New York. General; exch.
Carr, Frank B., 12 Bull Mt. Rd., Asheville, N. Car. General interest.
Casey, Mrs. Robert. V., 1208 W. Big Bend, Kirkwood 22, Mo. Fla. W. coast shells.
Cashman, Marjean, 7 No. Beechwood Ave., Catonsville, Md.
Castellanos, Dr. Jose R., Virtudes 258, Dep. 110, Habana, Cuba. Marine mollusks.
Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Blvd., Los Angeles 49, Calfi. *Cypraea, voluta,* Japanese shells.
Chace, Mr. and Mrs. Emery P., 3446 Van Dyke Ave., San Diego 5, Calif.
Chamberlin, Dr. J. Lockwood, U. S. Fisheries Station, Millville, Delaware.

Champion, Dr. Merrill E., 57 Prince St., Jamaica Plain 30, Mass.
Chandler, Mrs. Doris M., P.O. Box 621, Chatham, Mass. Winter: P.O. Box 3244, Ft. Myers Beach, Fla.
*Cheever, Dr. Austin W., 464 Beacon St., Boston 15, Mass.
Chen, Siu-fong, 4529 Middleton Lane, Bethesda 14, Md.
Chestnut, Dr. A. F., Inst. of Fisheries Research, Morehead City, N. C. Ecology of economic mollusks, taxonomy of pelecypods.
Chiaramonte, Michael P., P.O. Box 311, Shelter Is. Hts., N. Y. Marine life, high school curricula.
Chicoine, Martin J., 2013 New Hampshire Ave., NW, Washington 9, D. C.
Church, Austin, 140 St. Joseph Ave., P. O. Drawer "C", Trenton, Mich.
Ciarla, Otello, Rua Laurinda Santos Lobo, 311 Santa Theresa, Rio de Janeiro, Brazil.
Claar, Elmer A., 1400 Lake Shore Dr., Chicago 10, Ill. *Cypraea.*
Clarke, Arthur H., Jr., Dept. of Geology, Cornell University, Ithaca, N. Y. Sphaeridae; New England marine shells.
Clarke, Dr. Rosemary, P. O. Box 221, DeLand, Fla.
*Clench, Dr. William J., Museum of Comp. Zool., Cambridge 38, Mass. Collect, exchange, buy.
Coats, Miss Ruth E., 1828½ S. Hill St., Oceanside, Calif.
Coleman, Mrs. Nellie, 5308 3rd Ave., So., St. Petersburg, Fla.
Coles, Mrs. Mary J., 801 American Trust Bldg., Nashville, Tenn.
Conchological Club of So. Calif., c/o E. P. Baker, 11619 Downey Ave., Downey, Calif.
Conchological Section, Buffalo Society of Natural Sciences, c/o Mrs. Catherine Bradley, Eden, N. Y.
Conkin, James, P.O. Box 711, Union Producing Co., Beeville, Texas.
Conkling, Joseph E., Box 264, Edgartown, Mass. Winter, 628 4th Ave., S., St. Petersburg, Fla. Collect, buy, exchange.
Connecticut Shell Club, Peabody Museum, New Haven, Conn.
Corbett, William Phelps, 185 Grove St., Plainfield, N. J. Exch. rare *Cypraea, Murex* and *Oliva.*
Corwin, Warren, Royal Palm Hammock, P.O. Goodland, Fla. Buy and sell shells.
Coulter, Chas. W., 79 Myrtle St., Brockton 6, Mass.
Cowles, Edward F., Jr., 12 Hillcrest Ave., New Rochelle, N. Y. Tropical marine shells; photography.
Craine, Mr. and Mrs. Z. W., 155 N. Broad St., Norwich, N. Y. Marines.
Cram, Dr. Eloise B., Federal Security Agency, U. S. Public Health Service, National Inst. of Health, Bethesda, Md.
Crant, Harold, The Shell Factory, P.O. Box 1231, Ft. Myers, Fla.
Crum, Mrs. Dan, 2196 Warren Rd., Lakewood 7, Ohio. *Conus; Voluta.*
Cumming, James A., Sunset Dr., Grand Island, N. Y.
Cumming, Mrs. James A., Sr., Sunset Dr., Grand Island, N. Y.

Darling, F. Murray, RFD No. 2, New Bedford, Mass. Marine life in general.
D'Attilio, Anthony, 44 Lynwood Dr., Valley Stream, Long Is., N. Y.
Davis, Allan W., P. O. Box 63, Gulf Breeze, Fla. Dealer; private collection.
Davis, Dorothy, Naples Shell Shop, 541 8th St., So., Naples, Fla.
Dawley, Dr. Charlotte, The Women's College, University of N. C., Greensboro, N. C.
DeLuca, Miss Gladys, 16 Oakland Ave., Wollaston 70, Mass.
DeLuca, Mrs. John A., 16 Oakland Ave., Wollaston 70, Mass.
Derr, Mr. and Mrs. John S., Jr., Dearbought, Rt. 1, Frederick, Md.
Desmond, Hon. Thomas C., P. O. 670, Newburgh, N. Y.
DeStefano, Dr. and Mrs. Fredrick, 2000 Palm Blvd., Brownsville, Texas. Gulf of Mexico shells.
DeWitt, Robt. M., Biol. Dept., Univ. of Fla., Gainsville, Fla.

Dexter, Dr. Ralph W., Dept. of Biology, Kent State Univ., P. O. Box 507, Kent, Ohio.
Dodd, Wm. E., M.D., Ocean St. and Beach Ave., Beach Haven, N. J.
Dodge, Henry, 6 Rochambeau Rd., Scarsdale, N. Y.
Donovan, James W., 3718 Calvin Ave., West Palm Beach, Fla.
Dorasavage, W. C., M.D., 700 Mahantonga St., Pottsville, Pa.
Drake, Robt. J., 3028 N. Oracle Rd., Tucson, Ariz.
Dranga, Anna and Ted, 1260 SW 1st St., Miami 35, Fla.
Dundee, Dr. Dolores, University Museums, U. of Mich., Ann Arbor, Mich. Land mollusks, f.w. mussels.
Dunav, Edward, Shell Art Novelty Co., 229 S. 9th St., Philadelphia 7, Penn. Sell; buy; exchange.
Dunmire, Miss Peggy, 1116 W. 4th St., Port Angeles, Wash. Shell coll.
Dvorak, Stanley J., 3856 W. 26th St., Chicago 23, Ill. Muricidae.

Eaton, Miss Ruth E., 3333 Orange St., Riverside, Cal.
Eddy, Anne-Elizabeth, 31 Beech St., East Orange, N. J. Amateur.
Edwards, Chas. S., Gen. Del., Nakomis, Florida. Fla. w.c. shells.
*Eggleston, Dr. Harla Ray, Chairman, Dept. of Biol., Marietta College, Marietta, Ohio.
Emerson, Dr. Wm. K., Am. Museum of Nat. Hist., Central Park W. at 179 St., New York 24, N. Y.
Emery, Adele K., Box 1265, South Miami, Florida. Fla. E. coast marines.
Entwisle, Mrs. H. F., 11 Dale Ave., Pompton Plains, N. J.
Erickson, Carl W., 4 Windsor Ave., Auburn Mass.
Eyerdam, Walter J., 7531 19th Ave. N.E., Seattle 5, Wash.

Falconer, Bessie, 236½ Bailey St., Los Angeles 33, Cal.
Fargo, William G., 506 Union St., Jackson, Mich. Dec. to May, P. O. Box 874, Pass-a-Grille, Fla. Tertiary mollusca.
Farrell, Mrs. Earl, P.O. Box 654, Des Moines, Wash. Amateur; exchange.
Field, Clyde L., 2534 "K" Ave., National City, Calif. *Voluta, Pecten, Murex, Spondylus.*
Fifield, Mrs. Barbara, 700 Tenth St., Coronado, Calif. General collecting.
Finley, Mrs. Ruth C., 4517 B St., Sacramento, Cal. *Conus;* exchange.
Finlay, C. John, Varadero Beach, Cuba. West Indian marine shells.
Fitch, John E., Calif. State Fish. Lab., Terminal Island, San Pedro, Cal.
Fletcher, Mr. and Mrs. Howard L., 1008 La Hermosa Dr., Redlands, Calif.
Flipse, Robt. C., M.D., and Mrs. Flipse, 1091 N.E. 88th St., Miami 38, Fla.
Flowers, Mrs. Edmay V., R.F.D. No. 2 Kirkwood, Gainesville, Florida.
Fobes, M. Sgt. Edwin L., P.O. Box 394, Hamilton A.F.B., Calif. *Cypraea.*
Foster, Mrs. Fred H., Oxford, Ind. Shells in general.
Foster, Paul M., Rt. 1, Box 120, Loma Linda, Calif. Microscopic anatomy.
Foster, Richard Winslow, Museum of Comp. Zool., Cambridge, Mass.
Fowler, Miss Verna A., 616 S. Sante Fe St., Salina, Kansas.
Fox, Ralph Olen, 1048 Monterey Ave., Berkeley 7, Cal.
Frampton, Mr. and Mrs. Henry G., Box 1052, Miami 6, Fla.
Franzen, Dr. Dorothea, Illinois Wesleyan Univ., Bloomington, Ill.
Freeman, Mr. and Mrs. Harley L., 353 S. Atlantic Ave., Ormond Beach, Fla.

Gardner, Mrs. Fred, R. D., Jamesville, N. Y.
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Weidman, Mr. and Mrs. Ralph B., East Grand Cay, Abaco, Bahamas, B.W.I.
Weingartner, Mathilde P., 17 Amelia Court, Staten Island 10, N. Y.
Welch, Dr. d'Alte A., John Carroll University, University Heights, Cleveland 18, Ohio.
West, Larry Joe, 1926 Aurelius Rd., Holt, Mich. Land f.w. mollusks.
Weyrauch, Dr. Wolfgang, Avda. Petit. Thouars 1961, Lima, Peru. S. A. land shells.
Wheel, Adlai B., Pet Haven, West Seneca Turnpike, Syracuse, N. Y.

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Widmer, Ernest C., 2 Park Ave., Daytona Beach, Fla. Exch. marine and f.w. Fla. material.

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Wong, Dr. Lois Chi, School of Tropical Medicine, Loma Linda, Calif.

Woodruff, Mrs. Alice, 362 Canal Rd., Sarasota, Fla. Collect, exchange.

Woolsey, Heathcote M., Green Pastures, Kent, Conn.

Wurtz, Charles B., 3247 Disston St. Philadelphia, Pa. Terrestrial Pulmonata.

Young, Miss Catherine J., 1901 27th Ave., No., St. Petersburg, Fla. Pectinidae; Cymatiidae; Muricidae.

Young, M. Sgt. and Mrs. Geo. M., 7545 Alder Lane, Coati, Calif.

Zellers, Mrs. Lucille, 714 Elm St., El Cerrito 8, Calif. Gen. marine life.

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Zorath, Peter, 15 Willow Place, Brooklyn 1, N. Y.

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A. M. U., Twenty-third Annual Meeting

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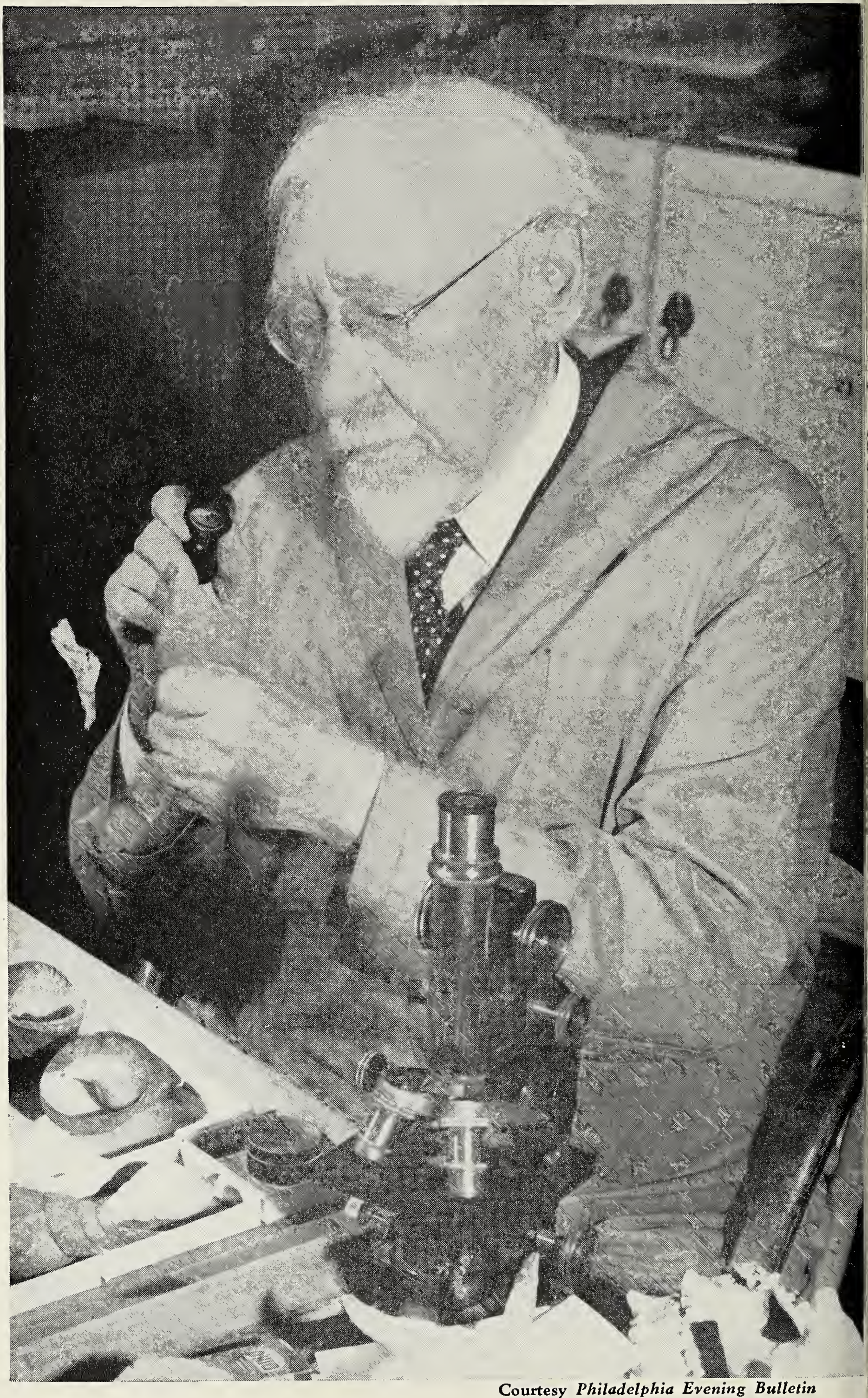

Courtesy *Philadelphia Evening Bulletin*

DR. HENRY A. PILSBRY

HENRY AUGUSTUS PILSBRY

1862 - 1957

The first President of the American Malacological Union, Curator of Mollusks (and other invertebrates) at the Academy of Natural Sciences of Philadelphia, founder and Editor of The Nautilus, "Devoted to the interests of conchologists," passed away in his sleep, October 26, 1957, while at his winter home in Lantana, Florida. He was buried October 30 in the graveyard of St. Asaph's Church in Bala, a suburb of Philadelphia, where he lived for many years.

He was born on a farm in Johnson County near Iowa City, Iowa, December 7, 1862, and graduated from the nearby University of Iowa. After several years with newspapers and publishing companies he joined the staff of the Academy in 1887, and became Conservator of the Conchological Section and Editor of the Manual of Conchology early in 1888. In May, 1889, he began publication of The Nautilus and remained its senior editor for 68 years.

In 1890 he married Adeline Avery Pilsbry, who died in 1924; they are survived by two daughters, Elizabeth and Grace (Mrs. Fredrick J. Barcroft).

Up to 1940, his working life was summarized in "Scientific Contributions made from 1882 to 1939, by Henry A. Pilsbry, Sc. D., a bibliography arranged and published by the American Malacological Union." Since then, he had received another doctor's degree from Temple University (1941) in addition to those from the universities of Iowa and Pennsylvania. Most of his winters were spent, of course at work, in Florida, but during others he collected in Colombia and Peru and visited Argentina and, during his last, Guatemala. He became Honorary Life President of the Philadelphia Shell Club at its first meeting in 1955.

Since 1939, he had completed his monumental two volumes (actually four) on "Land Mollusca of North America (North of Mexico)" 1938-1948, which characteristically include a wealth of original studies in addition to exact compilation. In addition, he had added over 110 titles to his "Scientific contributions." Especially noteworthy are those on the land snails of Peru and Mexico, his revisions (with A. A. Olsson and T. L. McGinty) of the minute marine Vitrinellidae, his new Florida family Stenacmidae, and his studies (with Olsson) on volutes and barnacles. Even when in a Philadelphia hospital after his next-to-last heart attack, he corrected the galley proof of a paper on *Solaropsis* and *Nenia* and was joyfully at work on the manuscript of another, on nomenclature.

Of course, he still lives on forever, in the memories of his many friends and colleagues, as well as in his more than a thousand scientific contributions, to which might be added an almost equal number of his reviews of the publications of others. None of us will ever meet his equal in malacology.

HORACE B. BAKER

THE AMERICAN MALACOLOGICAL UNION

TWENTY-THIRD ANNUAL MEETING

YALE UNIVERSITY, JULY 16-19, 1957

In 1701 several Connecticut clergymen pooled their books as a combined gift to an institution of higher learning not yet in existence; a year later and according to their convictions, a college was begun with one student in the village of Saybrook. Fifteen more years and it was transferred to New Haven and named for one Elihu Yale, a merchant prince of the East India Company who had aided the new school by a substantial gift of merchandise.

Two hundred and forty-one years later an organization which by Yale standards is youthful to the point of infancy met for the twenty-third time. As guests of Mr. Percy A. Morris and the Connecticut Shell Club, one hundred and eleven members of the American Malacological Union and their friends occupied the Freshmen dormitories of McClellen Hall and Bingham Hall. A room in the oldest of the Yale buildings, Connecticut Hall (1725), was assigned as A.M.U. headquarters. Here Mr. Morris and his staff welcomed newcomers, issued badges, assigned rooms and distributed the attractive programs which promised a full and instructive meeting.

The walled sanctuary of the old campus with its benches in the welcome shade of ancient elms was seldom deserted. There delegates rested and chatted, or in walking to the meeting room in another building on the quadrangle trod the ground pressed by the feet of such notable students as Nathan Hale, Noah Webster, Eli Whitney and James Fennimore Cooper.

On each of the four days the weather was delightful, sunny yet not too warm, the nights just right for sleeping. Twenty-four hours after the meeting closed all of New England sweltered in a heat wave which broke a nine year record. Truly the Lord loves malacologists!

Registration began at nine on Tuesday morning, July 16th. Those who signed in early took advantage of the opportunity of making a guided tour of the several colleges which together comprise Yale University. All who followed the student guide from one gabled hall to another, each with its own cloistered courtyard or fronting on shady elm bordered streets, were impressed by the air of functional antiquity which permeates such ancient establishments. In the form of magnificent wood carving, stained glass and marble, one building after another carries out the pattern of the somber splendor of an earlier day. One of the newer buildings houses the Sterling Memorial Library, open alike to students and the residents of New Haven. Here stained glass portrays the clergy making their gift of books and on display is a copy of a Gutenberg Bible of about 1460.

The end of the tour coincided with the lunch hour and at 1:30 President Ruth D. Turner called the meeting to order in one of the lecture rooms of Linsly-Chittenden Hall. She introduced Dr. Carl O. Dunbar, Director of the Peabody Museum of Natural History, Yale University.

Dr. Dunbar voiced a warm welcome to the visiting malacologists. He said that he regretted that, because of the lack of adequate facilities, the lecture sessions could not have been held at the museum. An addition to it is being built and one day a hall may be added which will then be at the disposal of the group when another meeting is scheduled for New Haven. He urged everyone to visit the museum to view the shell collection and other exhibits, and closed his brief remarks with all good wishes for a successful meeting. "Yours is an important organization doing important work. I envy you your interest!"

Dr. Turner thanked Dr. Dunbar on behalf of the members of the American Malacological Union for the hospitality being shown them. All of the visitors, she said, were impressed by the beauty of the Yale campus and were very happy with the facilities placed at their disposal. She said that Yale University has special meaning for malacologists since it was here that Benjamin Silliman compiled his Journal which he began in 1818 and which ran to 255 volumes. During the years that Addison E. Verrill was on the Faculty as Professor of Zoology, Yale University was a center of malacological study; together with his assistant, Katherine Bush, he published a long series of papers. Charles Montague Cooke of Honolulu was a student of Verrill's and upon returning to Hawaii to join the staff of the Bernice P. Bishop Museum he carried the influence of the older man into his efforts. Under Cooke's influence the Bishop Museum became a center for the study of Pacific mollusks. It was probably due to the combined energies of Verrill and Cooke that the Yale-Bishop Museum Fellowships came into being. While these fellowships are granted to research workers in any field of natural history, they have aided many malacologists. In recent years little work has been done at Yale in the field of malacology other than that the Peabody Museum collection of shells has been ably curated by Mr. Percy Morris who has added to it as the opportunity has afforded.

Not only has Mr. Morris brought the Peabody shell collection up to date, said Dr. Turner, but as chairman of the local committee he had worked unceasingly to arrange the thousand and one details which such a meeting always presents. "The thanks of the A.M.U. to Percy Morris, his right hand helper, Mrs. Frances Bissell, and to all of the members of the Connecticut Shell Club who together have done a wonderful job of organizing this meeting!" She then introduced Mr. Morris, who spoke on:

THE PEABODY MUSEUM COLLECTIONS. Mr. Percy A. Morris, Peabody Museum of Natural History, Yale University.

In giving a brief history of the Yale collections Mr. Morris told a little about the great conchologist, A. E. Verrill, and of his own work in locating as many as possible of the Verrill types. The collection is being organized for future workers. Two important collections have recently been acquired: the Sidney S. Holt collection of *Liguus* representing over fifty years of collecting in Florida and Cuba; and the collection of the late Heathcote M. Woolsey who owned one of the largest private collections in the East.

THE "GALATHEA'S" GREAT DISCOVERY. Dr. William J. Clench, Museum of Comparative Zoology, Harvard University.

(Abstract)

The Danish exploratory vessel, the "Galathea", made a very remarkable haul at Station 716 at 9° 23′ N., 89° 32′ W. (about 275 miles west of

Costa Rica) on May 6, 1952. The depth of this haul was 3,590 meters (11,775 feet), or a little over two miles in depth.

Ten live specimens and three extra shells were obtained of a mollusk which heretofore was known as a group only in the fossil state. The fossil species of the Cambro-Devonian periods were considered members of primitive Patellacea or primitive gastropods. The discovery of these ten live specimens indicates that they are not members of the Gastropoda at all but form a new class, the Monoplacophora, because of their segmentation—by having paired organs which are encased in a spoon-shaped shell. I quote directly from Dr. Lemche's paper:

"Almost bilaterally symmetrical molluscs with internal metamerism. A single piece of shell covers the pallium which extends all over the dorsum. Anus postero-median. Coelomic cavities well developed. The metamerically arranged, paired auricles deliver the blood to the two symmetrical, long ventricles, each on either side of the intestine. Metamerically arranged nephridia arise from the coelomic sacs to open on the surface in the pallial furrow. Gonads symmetrically arranged, possibly metameric, opening through the nephridia. Nervous system primitively orthoneurous."

A new genus and species were described for this animal, *Neopilina galatheae* Lemche.

REFERENCES:

Lemche, H. 1957, A New Living Deep-sea Mollusc of the Cambro-Devonian Class Monoplacophora. Nature 179:413-416, 4 text figures.

Yonge, C. M. 1957, Reflexions on the Monoplacophoran, *Neopilina galatheae* Lemche. Nature 179:672-673.

NOTES FROM NEW GUINEA.

Dr. Donald F. McMichael, Australian Museum, Sydney, Australia. Read by Madeline Pini.

(Abstract)

New Guinea is for the most part zoologically unknown, especially as to the terrestrial mollusks. A Yale University-Bishop Museum fellowship for 1956-57 and the granting of six months leave from the Australian Museum made possible an extensive tour through both Australian and Netherlands New Guinea. The purpose was to collect land snails, especially in inland areas since previous collections have been made near the coast. Already quite a number of obviously new species are in hand and some interesting zoogeographic results are likely.

The molluscan fauna is a mixture of three or four elements. First, there are the typical New Guinea forms with their distribution centered here, probably representing the old indigenous element of the fauna; this element includes such genera as *Papuina, Chloritis, Pupina* among the land snails, *Microdontia* and *Virgus* among the mussels. Second, there are those groups with affinities to the Indo-Malayan fauna, including particularly the larger Zonitid snails and Planispirids, and also the peculiar mussel, *Haasodonta.* Third, there are the small snails, widely distributed over the islands of the Pacific, such as the Microcystids, Diplomatinids, Trochomorphids, etc. Finally, there are a few forms, typically Australian, which may represent relicts of an older fauna or more recent arrivals from Australia. These include the Hadrid snails, the slug *Triboniophorus* and the freshwater mussels, *Velesunio* and *Westralunio.*

Much work will be necessary before a general account of the non-marine mollusca of New Guinea can be produced; many years of exploration and development are ahead before much of the country is made available to research workers.

POSSIBILITIES IN THE CULTIVATION OF SHELLFISH. Dr. Victor L. Loosanoff, U. S. Fisheries Laboratory, Milford, Connecticut.

(Abstract)

The paper considered various aspects of utilization of salt water ponds for shellfish culture, and discussed methods and approaches to be employed to achieve success in such endeavors. It was suggested that selection of desirable races is an important aspect in pond culture because many strains of oysters, transplanted from one district to another, do very poorly in new surroundings. Possibly, by genetic approaches, races can be developed to possess such desirable characteristics as rapid growth, resistance to diseases and propagation at lower temperatures. Knowledge of salinity requirements of different species of mollusks, as well as their quantitative and qualitative food requirements, should be acquired. Later, by using proper methods of mass culturing, ponds can be systematically supplied with desirable foods.

Control of enemies in ponds constitutes another very important aspect. It may be mechanical, biological or chemical, on which we are at present working, to eliminate such enemies of oysters and other mollusks as drills, crabs, sponges, worms, etc. Significant success in this direction has already been achieved at our laboratory.

Consideration should also be given to the possibility of utilizing ponds for cultivation of such exotic species as the European oyster, *Ostrea edulis.* These oysters, the parents of which we imported from Europe, were grown here under hatchery conditions and are now being used in pilot experiments in artificial ponds of New England. Similar experiments with another exotic species, the Japanese clam, *Tapes semidecussata,* are being conducted.

PRELIMINARY STUDIES IN INHERITANCE IN BIVALVES. Mr. Paul Chanley, U. S. Fisheries Laboratory, Milford, Connecticut.

(Abstract)

Vastly improved strains of commercial mollusks may be developed by utilization of the principles of selective breeding and hybridization that have proven successful in agriculture. Several preliminary experiments in molluscan inheritance are being conducted at Milford Laboratory.

Sibling hard shell clams, *Venus mercenaria,* that were kept under the same environmental conditions for 28 months, ranged from 14.5 to 42.0 mm. in length at that time. It is hoped that a fast-growing race of clams can be developed by crossing the largest clams in this group with the largest clams in other similar populations.

When a phenotypic *V. mercenaria notata* was crossed with phenotypic unmarked *V. mercenaria,* one-half the offspring bore the typical purplish-brown *notata* markings and the other half was unmarked. When two phenotypic *V. mercenaria notata* were crossed, three-fourths of the offspring were marked and one-fourth was unmarked. The results of these two crosses indicate that the "*notata*" parents were heterozygous for this marking and that the marking is dominant to the unmarked characteristic. Further experiments are necessary to verify these conclusions.

V. mercenaria and V. campechiensis have been successfully crossed. The resulting hybrids have been found to be fertile and a second hybrid generation has been raised. Both V. campechiensis and the hybrid clams died after exposure to Connecticut winter water temperatures.

SOME EFFECTS OF LOWERED SALINITIES ON PROPAGATION AND EARLY DEVELOPMENT OF CLAMS AND OYSTERS. Mr. Harry C. Davis, U. S. Fisheries Laboratory, Milford, Connecticut.

(Abstract)

The optimum salinity for the development of eggs of Long Island Sound clams *(Venus mercenaria)* was about 27.5 p.p.t. No normal larvae developed at salinities of 17.5 p.p.t. or lower. The upper salinity limit for development of clam eggs appeared to be 35.0 p.p.t. and only an occasional normal larva developed at this salinity. Straight-hinged clam larvae grew reasonably well at 17.5 p.p.t. and many reached metamorphosis. At 15.0 p.p.t. none of the larvae reached metamorphosis although some lived for ten days or more and showed appreciable growth. At 12.5 p.p.t. straight-hinged clam larvae showed no growth and all were dead by the eighth or tenth day.

The optimum salinity for the development of eggs of the Long Island Sound oyster *(Crassostrea virginica)* was found to be 22.5 p.p.t. although some normal larvae developed in salinities as low as 12.5 p.p.t. and as high as 35.0 p.p.t. The optimum salinity for growth of the straight-hinged larvae, however, was 17.5 p.p.t., and older oyster larvae grew quite well and set at salinities as low as 12.5 p.p.t. Growth even of older oyster larvae at 10.0 p.p.t. was considerably slower than at 12.5 p.p.t.

With this paper the first lecture session of the meeting was conluded.

During the afternoon many late arrivals had registered, and the evening afforded the ever-welcome opportunity to renew old friendships and establish new ones. The annual meeting of the Executive Council was held at this time.

Wednesday morning's sessions were begun with routine announcements. Then the following papers were introduced:

SMALL BEGINNINGS. Mr. Adali B. Wheel, Syracuse, New York.

Mr. Wheel has often spoken on these occasions of his work with Boy Scouts, Y.M.C.A. groups, and the Boy's Club of Syracuse. This time the value of his encouragement and guidance in nature studies was borne out by the fact that one of the previous speakers, Mr. Paul Chanley, had been one of Mr. Wheel's "boys." Duplicate shells or other marine material is always welcome and members are asked to remember Captain Wheel and his crew when anything which might appeal to a boy is to be discarded.

WESLEY NEWCOMB: A BIOGRAPHICAL RESUMÉ. Mr. Arthur H. Clarke, Jr., Cornell University, Ithaca, New York.

(Abstract)

Wesley Newcomb, the last of the old school of American conchologists, was born in Pittstown, New York, on October 20, 1808, the third son of Dr. Simon Newcomb and Sarah (Follett) Newcomb. Newcomb obtained his M.D. degree from Castleton Medical College in Vermont and after

visiting Europe for further study established medical practice in Albany. In 1838 he married Mrs. Helen H. Wells Post and 1842 a son Thomas was born.

In 1849 the Newcomb family travelled to California and early the next year they moved to Honolulu, Hawaiian Islands. Here Newcomb made his famous collection of Achatinellidae and, in two papers published in 1853 and 1854, he described 79 new species in this family. In 1856 the Newcombs returned to Albany and, after visiting Europe to study types in European collections, Newcomb published his "Synopsis of the Genus *Achatinella*".

In 1858 the Newcombs returned to California and medical practice was established in Oakland. During the next ten years he travelled in Central and South America and described many new mollusks, especially species of *Helix* from California. In 1868 the Newcomb Collection, then the third largest in America, was sold to Ezra Cornell for $15,000. Newcomb supervised its installation in the museum at newly founded Cornell University and remained in Ithaca as its curator until his death on January 27, 1892.

Through Newcomb's travels and correspondence the collection came to contain many specimens, including types, from nearly every worker active during that period. The collection has remained intact and is now housed in the Geology Department at Cornell. It contains about 17,000 lots and represents in excess of 10,000 species.

Between 1853 and 1874 Newcomb published 21 scientific papers and described 126 species of mollusks. Dr. Henry A. Pilsbry writes: "Newcomb was an excellent conchologist of the old school. Most of the forms defined by him are still held to be valid species or subspecies. He was one of the small group of pioneers of whom Say, Gould, Lea, Conrad, and A. Binney were illustrious examples. Their work cleared the way for later malacologists."

ON RAISING LIGUUS. Dr. Rosemary Clarke, Deland, Florida.

Dr. Clarke delighted her audience by her observations about the *Liguus* snails which she is raising. Interesting animals with methodical habits, they seem to be affected by the outside weather. On a diet of lettuce, citrus, bark (grapefruit preferred) and a type of resurrection fern, they grew 7½ mm. the first year. One estivated nearly six months.

A VISIT TO THOMAS SAY'S NEW HARMONY. Mr. Richard I. Johnson, Museum of Comparative Zoology, Harvard University.

(Abstract)

New Harmony, Indiana was the birthplace of two of the most celebrated Socialist experiments made in the United States. It was founded in 1814 by the Rappites, a group of peasants from Württemberg, Germany. They were under the strict ecclesiastical rule of George Rapp, who taught certain doctrines which were peculiarly his own. He preached the imminent second coming of Christ, but while waiting, his followers built a solid village in the wilderness and sold liquor to the boatmen who plied the Ohio and Wabash Rivers. Prosperity led to laxness, so the village was sold to the reformer Robert Owen of New Lanark, Scotland, and the Rappites moved on to a new settlement where they were again plagued with material success.

Robert Owen published a bold invitation to people who wished to participate in his Socialist Utopia. He enlisted the aid of William Maclure of Philadelphia, who gathered together a group of distinguished naturalists including Thomas Say and Charles A. Lesueur. In New Harmony, Say began his *American Conchology,* which was interrupted when he eloped with the colorist. Even before Say's untimely death in 1834, the experiment was a failure. All harmony between Owen and Maclure was gone, but Say had remained to look after Maclure's interests. Upon Say's death Mrs. Say continued to carry on his work.

The visitor can still see Say's house, his tomb, Maclure's residence and many of the old Rappite buildings. This sleepy little town with its interesting past is well worth the visit.

SPECIATION OF BUSYCON. Dr. Thomas E. Pulley, Museum of Natural History, Houston, Texas.

MOLLUSKS FROM MOLLUSK. Dr. Joseph P. E. Morrison, U. S. National Museum.

MORE NEW ENGLAND NUDIBRANCHS. Dr. George M. Moore, University of New Hampshire.

New kodachromes of several species of New England Nudibranchs were shown.

INVESTIGATIONS ON PLEISTOCENE MOLLUSCA IN OHIO. Dr. Aurèle LaRocque, Ohio State University.

(Abstract)

Early studies on Pleistocene Mollusca in Ohio (Billups, 1902; Sterki, 1907, 1920; Baker, 1920) gave little attention to the geologic aspects of the faunas studied. Recent work by Leonard and his associates in Kansas (Leonard 1950, 1952; Frye and Leonard, 1952) have shown that Pleistocene Mollusca have some stratigraphic value in that state. Frankel (1957) casts doubt on the value of Mollusca as guide fossils on the basis of his work in Nebraska. Studies by the writer and his associates in Ohio (La Rocque, 1952; La Rocque and Conley, 1956; La Rocque and Forsyth, 1957) give promise that Mollusca may have stratigraphic value in Ohio also. Wayne (1957) has reached similar conclusions in Indiana.

The Ohio State University group uses intensive methods that combine geological and biological techniques. Samples are collected from a measured section; lithologic units and, within each unit, successive two-inch layers, are studied separately. This method reveals the change in composition of the fauna with time. Quantitative methods are stressed; for each two-inch layer a sample of not less than 1,000 shells is sorted and identified and the abundance of each species is shown as a percentage of the total number of individuals. Freshwater Mollusca within a deposit reveal the nature of the aquatic environment in which they lived and the successive changes that took place within the body of water. Land snails, which appear in much smaller quantities in most of these deposits, were washed in from the slopes surrounding the deposit studied. They give some indication of the terrestrial environments bordering the body of water.

Each fauna is compared with known data on distribution of the species concerned. The geologic situation of each deposit is studied to determine its relation to known moraines, valley trains, outwash plains, and geomorphic features. Fossil wood is collected wherever present and submitted to co-operating physicists for radiocarbon age determinations. Finally, ostracodes are collected and submitted for study to a specialist in that group to check results yielded by the Mollusca.

So far, the results of three such studies (La Rocque, 1952; La Rocque and Conley, 1956; La Rocque and Forsyth, 1957) have been published. Six more are in preparation and are tentatively scheduled for publication within a year. They are widely separated geographically in the state of Ohio and differ widely in geologic situation and age.

In several of these deposits the accompanying mammalian fauna is of interest. For example, the Orleton fauna (La Rocque, 1952) was collected during excavation of a mastodon; the Northern Lights fauna (Columbus, Franklin County, Ohio) was brought to our attention through the finding of a Giant Beaver skull accompanied by wood gnawed in typical beaver fashion.

COLLECTING EXPERIENCES IN TEXAS. Dr. Joseph C. Bequaert, University of Houston.

THE IMPORTANCE OF THE AMATEUR. Dr. William J. Clench, Museum of Comparative Zoology.

(Abstract)

Amateurs have played an important part in the development of the great collections in our country. That of the Museum of Comparative Zoology was started when an amateur, who was by trade an accountant, associated with a book publishing company and with silver plating, was employed by Louis Agassiz as the Museum's first curator of mollusks; John G. Anthony served in that capacity from 1863 until his death in 1877. Three other men who made lasting contributions to the science of malacology devoted their lives to pursuits quite different: Junius Henderson was a county judge, Calvin Goodrich a newspaper editor, Bryant Walker a corporation lawyer.

Earlier contributors to the field were Sir Hans Sloan, Dr. Martin Lister, Martini — all physicians. Martini's associate Chemnitz was an ecclesiastic and Albertus Seba a wealthy apothecary. Each of these pre-Linnean amateurs by their research and conclusions have had definite influence on the work being done today.

A chart was made in the preparation of this paper, and it shows that nearly 50% of the accessions or lots which comprise the collection of the M.C.Z. were the contributions of amateurs. An even greater part was played by the amateur in connection with the lots received by exchange, gift or purchase from other institutions — here 75% (at least) of the shells received were either collected or donated by non-professionals. About the same percentage applies to those shells received from dealers, and the aid the interested amateur has given to various expeditions ranges from personal efforts to financial backing.

Although these figures were compiled in regard to the amateur's contribution to M.C.Z., they may be presumed to apply to other major collections of mollusks in this country.

A group picture was taken during the noon hour. The first four afternoon papers constituted a symposium on medical malacology with Dr. Edward H. Michelson presiding.

THE DEVELOPMENT AND PRESENT STATE OF MEDICAL MALACOLOGY. Dr. Edward H. Michelson, Department of Tropical Public Health, Harvard School of Public Health.

ECOLOGY OF AUSTRALORBIS GLABRATUS, SNAIL INTERMEDIATE HOST OF SCHISTOSOMA MANSONI IN PUERTO RICO.[1] Dr. David Pimental, Department of Entomology, Cornell University, Ithaca, New York.

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[1] From the Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Savannah, Georgia.

(Abstract)

In a study of the ecology of *Australorbis glabratus,* the snail intermediate host of *Schistosoma mansoni* in Puerto Rico, in its natural environment, information was collected concerning its life history, vagility, habits, distribution, biotic environment, and physiochemical environment. The life history of the snail from egg to egg takes an average of 77 days; incubation period averages 7.9 days. Approximately 20 eggs are contained in an egg mass and one large mature snail may produce 10,000 eggs per year. The vagility of *A. glabratus* is low. In a study in which 11,307 snails were marked and released, *A. glabratus* moved an average of 19 feet upstream and 23 feet downstream with a maximum distance traveled of 276 feet downstream during a five week period. Observations indicated *A. glabratus* are transported from one water body to another by flood waters or by larger animal of greater vagility. Insects were collected with snails attached to them. These insects might be important in the transport of *A. glabratus. A. glabratus* migrate upward, coming close to the water surface at night and return to the depths during the daytime. In laboratory tests two percent of a snail population resisted desiccation for four months by aestivation; no snail burrowed into the mud to aestivate. Large populations of *A. glabratus* occur in Puerto Rico where the topography is flat or where there are gently rolling hills and in areas where 60 or more inches of rain fell evenly distributed during the year. A study was made of the association of various plants and animals with the snail. Parasites such as *Schistosoma mansoni* are important in killing a small percentage of *A. glabratus.* Predators, rats and ants, kill many *A. glabratus,* usually stranded animals. The food consists of any type of organic material, excepting material that is extremely hard in consistency, poisonous, or possibly too minute. *A. glabratus* did not inhabit temporary water bodies. The snail is found principally in streams with an average gradient of less than 2.5 percent to a maximum of 4.5 percent. Snails occur most often in slow flowing water of about 0.2 fps or less but occasionally are collected in water moving at up to 2.0 fps. The flooding and flushing of slow flowing waters caused severe reductions in the populations of *A. glabratus.* The osmoregulatory system

of the snail is not well adapted to rapid changes from one habitat of a certain total dissolved solids content to another with a different total dissolved solids content, even when the species tolerance is not exceeded. *A. glabratus* did not exist in heavily polluted or brackish water.

INTERMEDIATE HOSTS OF SCHISTOSOMA MANSONI AND SCHISTOSOMA HAEMATOBIUM IN AFRICA AND THEIR CONTROL.[1]

Dr. Elmer G. Berry, Laboratory of Tropical Diseases, National Institute of Allergy and Infectious Diseases, U. S. Department of Health, Education and Welfare, Public Health Service, Bethesda, Maryland.

(Abstract)

[1] Paper delivered at the 23rd annual meeting of the American Malacological Union on July 17, 1957, at Yale University, New Haven, Conn.

Schistosomiasis is a chronic, human disease caused by a fluke that lives in the blood vessels of the inhabitants of parts of Africa, the Middle East, the Orient, certain islands in the Caribbean and a few countries in South America. In Africa both genito-urinary *(Schistosoma haematobium)* and intestinal *(S. mansoni)* schistosomiasis are endemic. Each of these requires an aquatic snail of the Family Planorbidae to complete its life cycle. At least 10 species of *Bulinus* are known to serve as intermediate hosts of *S. haematobium* and 6 species of *Biomphalaria* have been found naturally infected with *S. mansoni.*

The most practical method of controlling schistosomiasis is by eliminating or reducing the number of snails which serve as intermediate hosts. Copper sulfate has been the most commonly used compound to kill aquatic snails, but since it quickly precipitates in natural waters due to the presence of organic material its molluscacidal effect is very limited.

During the last 10 years more than 2,000 organic compounds have been tested at the Laboratory of Tropical Diseases of the National Institutes of Health in the hope of finding a better molluscacide. Several were found which appeared to be far superior to copper sulfate, but one in particular, sodium pentachlorophenate, killed not only the snail but also the snail eggs within 24 hours in concentrations of only 10 parts per million. Not only is it extremely stable in waters choked with vegetation, but when correctly applied it has maintained its effectiveness in killing snails in certain areas for at least 25 miles from the point of application. At such low concentrations this chemical is entirely nontoxic to humans or domestic animals and noninjurious to crops.

To demonstrate the effectiveness of sodium pentachlorophenate, a schistosomiasis control project, sponsored by the International Cooperation Administration and the Ministry of Health of Egypt and supervised by 2 members from the Laboratory of Tropical Diseases, was conducted near Cairo from 1953 to 1956. Prior to applying the molluscacide a survey of the school children between the ages of 6 to 10 years was made to determine the incidence of the disease. It was found that 40.2 percent were infected with *S. haematobium* and in certain schools all of the pupils of the 10-year age group were infected. *S. mansoni* infections were not nearly as high, being a little more than 5 percent. Therapy was administered only to those children who were seriously infected.

Two applications of chemical per year, using a total of nearly 9 tons, were sufficient to treat more than 100 miles of primary and secondary canals and to prevent the 75,000 inhabitants within the area from becoming reinfected. After 2 years of snail control the incidence of schistosome infection in the school children in the area had decreased 35.6 percent in the case of *S. haematobium* and 65 percent in the case of *S. mansoni.*

The Egyptian Ministry of Health has agreed to continue this demonstration until 1960. By then all of the school children between the ages of 6 and 10 years who have lived their entire lives in the project area should be practically free of this debilitating disease.

PROBLEMS IN THE CONTROL OF INTERMEDIATE HOSTS (ONCOMELANIA AND POMATIOPSIS) OF THE ORIENTAL BLOOD FLUKE. Dr. Henry van der Schalie, Museum of Zoology, University of Michigan.

(Abstract)

Schistosomiasis, or human blood fluke, is now recognized as one of the major health problems in many underdeveloped regions of the world. Although several large laboratories in our country and Europe have been industriously trying to find suitable drugs to serve as a cure, it is generally conceded that no good drug has as yet been found. Consequently, the preventative approach must receive a major emphasis. The solution, then, is related to the control of the intermediate hosts, i.e. the snail which in the case of the Oriental Blood Fluke *(Schistosoma japonicum)* is one of the four recognized species of *Oncomelania.*

Four major schistosomiasis regions are recognized in the Orient. On Formosa, where the disease is carried by *Oncomelania formosana,* there is some question as to whether the fluke is perhaps a non-human type. In China, where it is carried by *Oncomelania hupensis,* millions of people suffer from the disease, but there is little likelihood that we can study the conditions while the region is in Communist hands. However, a team is working in Japan at the 406th Army Medical Center where the work is directed towards the control of *Oncomelania nosophora* with the use of some modern molluscicides such as the dinitro and halogenated phenols. The control there is directed towards two major lines of approach. The chemicals are distributed in a single intensive dose during the spring in rice growing regions (such as the Kofu Valley region shown with the kodachrome slides) to kill the adult snails; while later in the year dilute concentrations of molluscicides are introduced into the flowing water to elminate the juvenile snails. In the Philippines several of the larger islands in the southern part of the region are infested with schistosomiasis and it is carried there by *Oncomelania quadrasi.* The World Health Organization has a team with headquarters at Palo in Leyte. Some excellent work has been done towards finding methods of control. It is of interest to note in the kodachrome slides that the approach to control in the Philippines is not by using molluscicides but by eradicating snails in infested regions by changing the normal environment of the snails *Oncomelania.* Hence, a small swamp which was heavily stocked with infected snails was changed to a fish pond producing food and eliminating all the *Oncomelania;* another swampy and infested region was eliminated with the use of a bulldozer and

is now a productive peanut growing patch. In addition to the field activities by the WHO team in the laboratory at Leyte there is a wide range of basic studies of both the parasite and the snail.

It is fortunate that in our own country the species of *Pomatiopsis* are so similar to those of *Oncomelania* that they enable many basic studies which help to provide a better understanding of the systematics and biology of both groups. During the past few years such studies have been under way in the Mollusk Division of the Museum of Zoology. This work has enabled the publication of information dealing with the morphology, ecology, distribution and life history of the two most common species of *Pomatiopsis, P. lapidaria* (Say) and *P. cincinnatiensis (Lea).* This work has revealed a surprising amount of basic similarity between *Oncomelania* and *Pomatiopsis;* it has also shown that much study concerning the function of organs is needed before the terminology used to describe the morphological structures can have any real meaning.

COPEPOD PARASITES OF MOLLUSKS.

Dr. Arthur G. Humes, Department of Biology, Boston University.

(Abstract)

Prosobranch gastropods are parasitized by only a few genera of copepods (for example, *Trochicola, Cerastocheres, Panaietis,* and *Monstrilla).* Opisthobranchs, however, are hosts to many genera, among them *Lichomolgus, Splanchnotrophus, Briarella, Artotrogus,* and *Anthessius.* Some, like *Lichomolgus,* live free on the surface of the gills or mantle. Others, like *Splanchnotrophus,* are embedded in the integument or visceral mass.

The Pelecypoda have many copepod parasites, more than any other class. Some like *Mytilicola,* have greatly modified bodies, and live as endoparasites in the intestine. Others, like *Modiolicola, Ostrincola, Pseudomyicola, Conchyliurus, Myocheres, Paranthessius,* and *Myicola,* have relatively unmodified bodies and live in the mantle cavity where they cling to the surface of the gills.

The Cephalopoda have only a few copepod parasites. *Anchicaligus* lives in the mantle cavity of *Nautilus, Cholidya* occurs on the arm membranes of *Benthoctopus, Lichomolgus* is found on the gills of *Sepia,* and *Octopicola* lives on the mantle of *Octopus.*

Copepod parasites are unknown in three classes of mollusks, namely, the Monoplacophora, Amphineura, and Scaphopoda.

More than 100 species of copepods are known from mollusks, and most of these occur on gastropods and pelecypods. More than 117 genera of mollusks are parasitized.

About 60 genera of copepods live on or in mollusks. These come from all the suborders of the Copepoda except the Calanoida and the Notodelphyoida. Only a few members of the Caligoida, Harpacticoida, Lernaeoida, and Monstrilloida are mollusk parasites. Most of the copepods associated with mollusks are Cyclopoida.

Fresh-water mollusks have no known copepod parasites.

Host specificity seems to be not very strict, but in most cases collections have not been extensive enough to determine this.

Damage to the mollusks from external copepod parasites appears to be slight. Mortality in mussels has been attributed to the presence of the endoparasitic copepod *Mytilicola*. Certain copepods parasitize economically important molusks, for example, *Teredicola* and *Teredophilus* in shipworms, *Myocheres* in soft-shelled clams, and *Ostrincola* in oysters, but the effects of such parasites are largely unknown.

Since the evening was balmy, the scheduled showing of pictures of previous meetings took place out of doors, the grey benches continuing their usefulness. Before it was dark enough for slides, the further adventures of Joe and Moe were chronicled, a continuation of 'the hilarious skit put on by Messrs. Jacobson and D'Attilio at the 1955 meeting of the A.M.U. (Joe and Moe are a pair of unusually garrulous *Cepaea nemoralis*).

Color slides furnished by several persons recalled highlights of former meetings and brought fond memories of absent friends. The enjoyable session was concluded by the showing of an especially fine series of pictures of shells and living mollusks, the work of Mr. and Mrs. Theophil Kuczynski.

Thursday morning opened with the annual business meeting. The report of the Secretary-Treasurer brought the information that a steadily mounting membership list had reached, on June 1st, 1957, a total of 598 members in good standing together with a credit balance on the same date of $1,374.91.

The net profit on the publication *How to Collect Shells* was $259.44 with 234 copies of the original 1500 remaining unsold. In view of the fact that the demand has slowed to a steady pace which will eventually absorb this stockpile, the Council had voted to publish a second edition.

The nominating committee appointed by the President had selected the following panel to serve as officers of the American Malacological Union for the period 1957-58:

President, Aurèle LaRocque; Vice-President, R. Tucker Abbott; 2nd Vice-President, Albert R. Mead; Secretary-Treasurer, Margaret C. Teskey; Publications Editor, George M. Moore; Councillors-at-Large, Emery P. Chace, Ralph W. Dexter, Percy A. Morris, Katherine V. W. Palmer.

It was moved by Mr. Fred Tobleman, seconded by Mr. Harlem B. Ives, that the election of the slate as read be made unanimous and that the Secretary be instructed to cast a ballot accordingly. Carried.

The Secretary-Treasurer of the American Malacological Union, Pacific Division, Ruth E. Coats, reported that at the 1957 meeting of that body, Albert R. Mead had been elected to serve as Chairman for 1957-58, John E. Fitch was elected Vice-Chairman and Ruth E. Coats, Secretary-Treasurer.

It was announced that the A.M.U. had become an Affiliate of the American Association for the Advancement of Science and that Dr. Charlotte Dawley had been appointed by the Council to represent the A.M.U. as a voting delegate during 1957-58.

The Council had accepted the invitation of Dr. Henry van der Schalie that the 1958 meeting be held at the University of Michigan, Ann Arbor, Michigan. With this announcement the business meeting was adjourned.

The Secretary made her annual request for abstracts of the papers being read and for clippings and pictures to be placed in the A.M.U. scrapbook. The names of those members who had died during the past twelve months was read. On behalf of the A.M.U. Dr. Elmer G. Berry voiced appreciation and gratitude for the efforts of the members of the Connecticut Shell Club which had made possible the smooth progress of the meeting. Miss Ruth Coats extended the greeting of the Pacific Division together with all good wishes for a successful meeting.

Representatives of affiliated shell clubs were invited to report briefly on the recent activities of their groups. These members spoke for their club: R. Tucker Abbott, Philadelphia Shell Club; Richard I. Johnson, Boston Shell Club; Charlotte Ahders, New York Shell Club; Frances L. Bissell, Connecticut Shell Club; Mrs. Charles S. Lewis, Greater St. Louis Shell Club; Alger P. Blaine, St. Petersburg Shell Club; Margaret C. Teskey, Conchological Section, Buffalo Society of Natural Sciences; Letha S. Allen, Baltimore Shell Club; Charlotte Dawley, North Carolina Shell Club.

As these reports were concluded, Dr. Turner remarked that the importance of these local clubs cannot be over-emphasized. "Without the amateur the work of a scientist in our field would be much more difficult; these clubs provide enjoyment and information valuable alike to the youngsters, the amateurs and the professionals." She then introduced the following papers:

NOTES ON TRUNCATELLA WITH A PRELIMINARY CATALOGUE OF THE CARIBBEAN SPECIES. Dr. Alfredo de la Torre, read by Dr. J. P. E. Morrison.

ECOLOGY AND ZOOGEOGRAPHY OF TRUNCATELLA. Dr. J. P. E. Morrison, United States National Museum.

DISTRIBUTION AND APPARENT INTROGRESSION OF THE UNIONIDAE IN CENTRAL NEW YORK. Mr. Arthur H. Clarke, Jr., Cornell University.

(Abstract)

Central New York is drained by the Susquehanna River System in the southeast and by the Lower St. Lawrence River System throughout the rest of its area. Both systems contain unionid species common to the Atlantic Coastal Plain. The Lower St. Lawrence System contains additional species originally derived from Lake Erie and the Ohio-Mississippi Drainage. Recently, species from Lake Erie have again invaded this system in Central New York by way of the Erie Barge Canal which runs from Buffalo to Albany.

Observations suggest that gene exchange between species (introgressive hybridization) may have occurred here at least with respect to the inland *Lampsilis siliquoidea* Barnes and the coastal *L. radiata* Gmelin. Eight lots (average N = 30) of specimens randomly collected from stations on the Barge Canal and in the Lower St. Lawrence System ranging from the Niagara River to Lake Memphramagog, Vermont were analyzed for sexual dimorphism, index of obesity, ray width, and nacre color. All lots were intermediate in these characters between *siliquoidea* from Lake Erie and *radiata* from the Susquehanna River. Hybrid indices indicated (1) that in the Barge Canal and in the Lower St. Lawrence Drainage, the influence of *siliquoidea* decreased and the influence of *radiata* increased from west to east, and (2) that although both *radiata* and *siliquoidea* characters

occurred in each population sampled, *radiata* characters were dominant except in the western half of the Barge Canal and in the Niagara River where *siliquoidea* characters predominated.

In view of the width of the zone of intergradation, it was proposed that *L. siliquoidea* be reduced to the subspecies *L. radiata siliquoidea,* and that the former subspecies *L. siliquoidea rosacea* De Kay (Seneca Lake) and *L. radiata oneidaensis* Baker (Lake Oneida) be reduced to infrasubspecies or abandoned, since they represent only points in a continuum.

The distribution of Unionacea in the area was summarized. New records included: *Anodonta imbecillis* Say, Barge Canal at Pittsford, Fairport, and Macedon, N. Y.; *Lampsilis ochracea* Say, St. Lawrence River at Waddington, N. Y.; *Margaritifera margaritifera* Linné, stream near Lake Oneida, Cleveland, N. Y. (last reported by De Kay, 1843: "Lake Oneida") (all A. Clarke); and *Obovaria olivaria* Raf., St. Lawrence River, Sheek Island near Cornwall, Ontario (H. D. Athearn). Contrary to recent statements, *Alosa pseudoharengus,* the host fish of *Anodonta implicata* Say, occurs in the Lake Ontario Drainage and old, local records for this unionid may be partially correct.

GENERIC RELATIONSHIPS IN THE PILIDAE. Dr. Edward H. Michelson, Harvard School of Public Health.

A visit to the Peabody Museum of Natural History had been scheduled for mid-day and all who toured the interesting place were well repaid for having to eat a late and hurried lunch. The new hall of invertebrate zoology is as yet unfinished but most of the exhibits are in place. Among those in the mollusk alcove which attracted particular attention were: a set of plastic models illustrating the five classes: a tree of life of the ammonoids; an exhibition of various environments for the pelecypods; an exhibit of pelecypod families showing the fossil beginnings of each; a locality exhibit which shows a group of typical shells mounted on a cut-out map of the Florida-Cuba region; another locality exhibit showing typical New England shells on a map of that region. As always, host Percy Morris was a busy man as he opened shell cases, answered questions, and offered suggestions.

The afternoon was given over to a symposium on the distribution of New World Mollusca. Eight papers had been prepared by as many authorities and Dr. Thomas E. Pulley had consented to act as moderator. In view of the importance of the subject and of the time and care which had gone into the preparation of these papers, the suggestion came from several quarters that they be compiled and published as a whole rather than as brief abstracts in the annual report bulletin. (The Executive Council has since been polled by mail as to whether or not this publication should be undertaken by the American Malacological Union. The nearly unanimous opinion of all who have replied is that these papers deserve publication by the A.M.U. if the necessary funds are at hand or can be raised. MCT).

The contributions to the Symposium on the Distribution of New World Mollusca were:

WESTERN ATLANTIC MARINE MOLLUSKS. Dr. R. Tucker Abbott, Academy of Natural Sciences, Philadelphia.

OREGONIAN AND CALIFORNIAN MARINE MOLLUSKS. Dr. William K. Emerson, American Museum of Natural History.

PANAMIC AND PERUVIAN MARINE MOLLUSKS. A. A. Olsson, Coral Gables, Florida. Read by Robert Robertson.

MAGELLANIC MARINE MOLLUSKS. Dr. Juan J. Parodiz, Carnegie Museum, Pittsburgh.

NORTH AMERICAN LAND SNAIL DISPERSAL. Dr. H. B. Baker. University of Pennsylvania.

NORTH AMERICAN FRESHWATER MOLLUSKS. Dr. William J. Clench, Museum of Comparative Zoology.

SOUTH AND CENTRAL AMERICAN LAND AND FRESHWATER MOLLUSKS. Dr. Joseph C. Bequaert, University of Houston.

WEST INDIAN LAND MOLLUSKS. Dr. C. G. Aguayo, Universidad de Habana, and Dr. Ruth D. Turner, Museum of Comparative Zoology. Read by title.

The annual dinner at 7:00 o'clock was preceded by a social hour arranged by the members of the Connecticut Shell Club. Their hospitality was appreciated by all, who welcomed the opportunity to relax after a day-long presentation of scientific papers and to visit with old and new friends.

Places were laid for 116 at the banquet tables beneath the massive crystal chandelier in the President's Room in Memorial Hall; the decorations were flowers of yellow and white, the Yale colors.

As the tables were being cleared following an excellent roast beef dinner, Dr. Turner introduced Dr. Henry A. Pilsbry. His erect stature and firm voice belying his 94 years, the greatest malacologist of modern times told his audience that his interest in shells began over eighty years ago. "As a boy in Iowa I found a colony of beautiful little snails—Pupillids they were—and I watched them and wondered about them. From that time on I collected all shells as I found them. I didn't dream that there was literature to be had which described such things as snails until I got hold of a copy of DeKay's Natural History of New York State, that part which dealt with the mollusks. Using it as a guide I identified my shells, of course making many mistakes. The field was open then and since that time much work has been done. But there will always be interesting problems to be worked out by the young people who are here today and by those who will come after them. It is a wonderful, wonderful thing to be doing." As he concluded, prolonged applause testified to the love and respect his fellow members bear for Dr. Pilsbry.

Dr. Turner then expressed her gratitude to those who had aided her during her year in office, mentioning especially Mr. Percy Morris, Mrs. Frances Bissell and the members of the Connecticut Shell Club who had worked unceasingly for many months to ensure the success of the meeting. She asked the club members to stand. Applause bespoke the appreciation of their guests for a task well done.

Dr. Turner then introduced the new president, Dr. Aurèle LaRocque. Congratulating his predecessor on a masterful job, Dr. LaRocque said that when his turn comes to serve as chairman of the 1958 meeting he will attempt to do as well.

The tables were removed and the chairs regrouped to face a screen in the center of the room. "Fielding for the Pros" was the subject of an interesting illustrated talk by Mr. George F. Kline. He began by unfolding a familiar theme: shells on the beach at Sanibel which gradually wove their spell; realization by himself and Mrs. Kline that there were things in the ocean worth their attention other than the tarpon which had required such elaborate equipment. "We knew that to collect shells we'd need but a few simple things, easy to carry and to store."

While developing their hobby and trying to learn the identity of the shells, the Klines were more fortunate than most in that fairly early in the game they met the McGintys, Dr. Maxwell Smith, Dr. Clench and Dr. Turner from whom they received much help. Most valuable was the instruction in keeping accurate and detailed notes and data on all collecting.

Their greatest stroke of luck seems to have been in meeting another pair of enthusiastic amateurs, Mr. and Mrs. Alfred J. Ostheimer III. In 1955 the Klines accompanied the Ostheimers aboard the yacht *Gloria Maris* to the Palau Islands and in 1957 spent two months in Ceylon. During these expeditions, sponsored by the Academy of Natural Sciences and the Natural Science Foundation, hundreds of lots of marine shells which will engage the attention of the "pros" for years to come, were collected and shipped to Dr. Abbott at the Academy.

By means of beautiful Kodachrome slides the audience was transported to the Bahamas, the Palaus and Ceylon to observe actual underwater collecting and dredging, the gear and equipment used and some of the living specimens obtained.

On many occasions during the meeting the amateur had been told of his importance and of the value of his collections and observations in the field. Here was definite proof of this, as well as a chronicle of hard and valuable work which must also have been great fun. Not even Mr. Kline's final picture showing the monumental amount of collecting gear the party had found to be necessary in the "simple little pastime of collecting shells" dampened the conviction of the amateur who watched that in one way or another, he too is fielding for the pros.

On Friday two chartered buses carried those making the field trip to Milford, a pleasant village just off the Boston Post Road and the site of the U. S. Fish and Wildlife Service Laboratory, where Dr. Victor L. Loosanoff and his staff do extensive work on the area's main industry, oyster culture. Dr. Loosanoff was on hand to greet his guests and ushered them into the spotless laboratory where displays had been set up of the various animals that are used in the genetic and life history studies under controlled aquarium conditions. Larval clams of several kinds were to be seen under microscopes, and in the aquaria at all stages of growth. There were dyed starfish, used to study predation, and exhibits to show how effectively excess salt can kill boring sponges. Of particular interest was the room where unicellar algae are grown in large jars as food for the clams. Members of the laboratory staff were on hand to explain the work and answer questions.

Combing the tiny bit of shingle in front of the laboratory yielded, besides the ever-present *Urosalpinx cinerea, Littorina littorea, Nassarius obsoletus* and *Modiolus demissus,* a surprise in the presence of *Brachidontes recurvus,* doubtless brought in on specimen oysters.

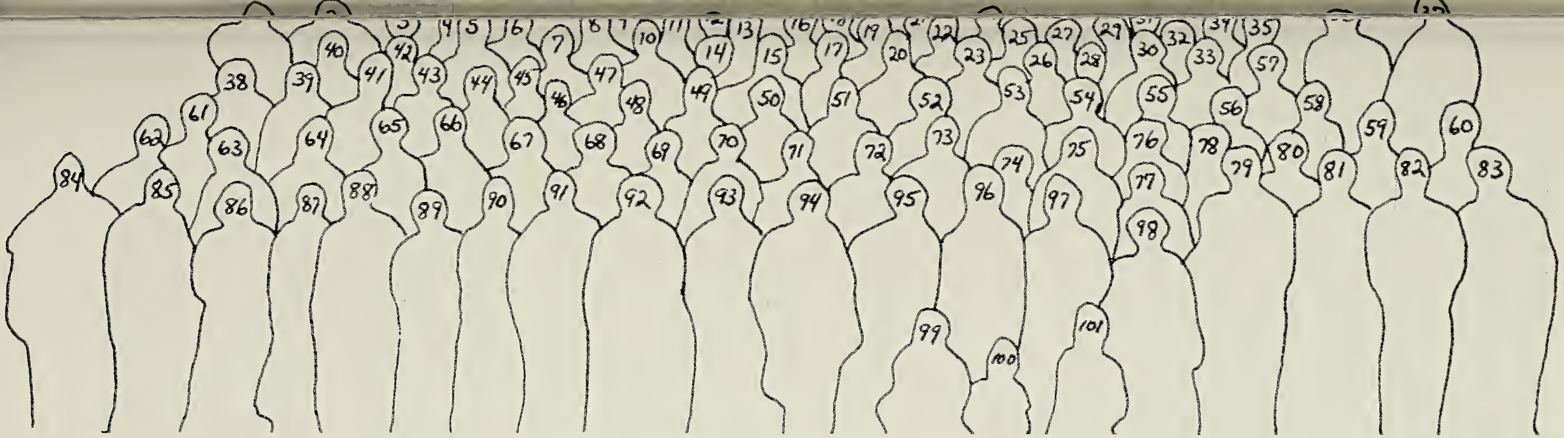
Collecting box lunches for the noon hour still to come, capacity crowds filled the two laboratory boats, *Starfish* and *Shang Wheeler.* For some distance offshore Long Island Sound is laid out in undersea oyster beds. Owned, rented or leased as the case may be, these subterranean farms are planted, cultivated and harvested much as are their counterparts ashore. The fishery depends in part on the research work done by the U. S. Fish and Wildlife Service to combat disease and natural enemies, and to develop shellfish of superior size and flavor.

The dredges were dropped on several types of bottom and the afternoon passed quickly as the hauls were sorted over and the occasional prize claimed by one person or another desiring a souvenir of the day. The men in charge of the boats discussed their work and demonstrated their ingenious method of collecting plankton; the sea water containing it is pumped aboard the boat, then passed through screens of desired mesh.

Those few who by their own choice were left on shore spent the hours chatting, napping, eating, feeding tidbits to Dr. Loosanoff's flock of mallard ducks. Then suddenly the dredging parties were back, the buses were waiting, and the 23rd annual meeting was history.

A.M.U. Yale University – New Haven, Conn. July 1957

TWENTY-THIRD ANNUAL MEETING, AMERICAN MALACOLOGICAL UNION



1. Thomas E. Pulley, 2. Richard I. Johnson, 3. Earl H. Reed, 4. Max Zappe, 5. Donald R. Moore, 6. David Pimental, 7. Ruth E. Coats, 8. Arthur H. Clarke, Jr., 9. Ralph W. Jackson, 11. Josef Vagvolgyi, 12. G. Usticke, 13. Mrs. George F. Kline, 14. Veronica P. Johns, 15. Anthony D'Attilio, 16. Mrs. Alfred J. Ostheimer, 17. Margaret C. Teskey, 18. Alfred J. Ostheimer, 3rd, 19. Mrs. H. M. Bixby, 20. Robert Robertson, 21. Horace B. Baker, 22. Virginia Orr, 23. Mrs. Beatrice B. Hughes, 24. d'Alte A. Welch, 25. Gertrude Thompson, 26. Katherine M. Anderson, 27. Mrs. F. Knight Hadley, 29. Mrs. A. Whittemore, 31. Joseph C. Bequaert, 32. Mathilde P. Weingartner, 33. Mrs. Gordon MacMillan, 34. Gordon K. MacMillan, 35. Mrs. Ivar H. Henrickson, 36. Elmer G. Berry, 37. David R. Franz, 38. George M. Moore, 39. William J. Clench, 40. William Hutchins, 41. Michael Britt, 42. Madeline Ann Pini, 43. Mrs. Michael Britt, 44. Mrs. William Clench, 45. Louise Hutchins, 46. Mrs. Z. W. Craine, 47. Mrs. Ralph Jackson, 48. Mrs. R. Tucker Abbott, 49. R. Tucker Abbott, 50. F. Knight Hadley, 51. Katherine V. W. Palmer, 52. Henry Van Felix, 53. Lester E. Allen, 54. Letha S. Allen, 55. George Jacobs, 56. Mrs. George Jacobs, 57. Frances L. Bissell, 58. Mrs. Ward Brown, 59. Aurele LaRocque, 60. Ivar H. Henrickson, 61. John C. Bradley, 62. Fred Tobleman, 63. Fritz Haas, 64. Charles B. Wurtz, 65. Mrs. Richard Johnson, 66. Harlem B. Ives, 67. Morris K. Jacobson, 68. Rosemary Clarke, 69. Catherine Ahders, 70. Germaine L. Warmke, 71. Juan J. Parodiz, 72. Mrs. Henry van der Schalie, 73. Henry van der Schalie, 74. Mrs. Elmer Berry, 75. Adlai B. Wheel, 76. Mrs. Charles S. Lewis, 77. Mrs. Adlai B. Wheel, 78. Charlotte Dawley, 79. Arnon L. Mehring, 80. Mariam E. Porter, 81. Joel T. Wooster, 82. William K. Emerson, 83. Joseph P. E. Morrison, 84. Edward H. Michelson, 85. Theophil Kuczynski, 86. Mrs. Theophil Kuczynski, 87. Margaret M. Teare, 88. Mrs. Eliot Armstrong, 89. Mrs. Roy C. Athearn, 90. Barbara P. Young, 91. Alger P. Blaine, 92. Mrs. Alger P. Blaine, 93. Jeanne S. Schwengel, 94. Henry A. Pilsbry, 95. Ruth D. Turner, 96. Mrs. Percy A. Morris, 97. Percy A. Morris, 98. Mrs. Henry Van Felix, 99. Nicky van der Schalie, 100. Master Jacobs, 101. Miss Jacobs.

MEMBERS AND GUESTS AT THE 1957 MEETING

Dr. and Mrs. R. Tucker Abbott, Philadelphia, Pennsylvania
Miss Charlotte Ahders, New York City
Lester E. Allen, Yarmouth, Nova Scotia
Miss Letha S. Allen, Hyattsville, Maryland
Miss Katherine M. Anderson, Chillicothe, Ohio
Mrs. Eliot Armstrong, Buffalo, New York
Mrs. Roy C. Athearn, Fall River, Massachusetts
Dr. Horace B. Baker, Philadelphia, Pennsylvania
Dr. Joseph C. Bequaert, Cambridge, Massachusetts
Dr. and Mrs. Elmer G. Berry, Bethesda, Maryland
Mr. and Mrs. Alger P. Blaine, Springfield, Massachusetts
Mrs. Frances LaDue Bissell, Milford, Connecticut
Mrs. H. M. Bixby, Bolton Landing, New York
John C. Bradley, Waterbury, Connecticut
Mr. and Mrs. M. W. Britt, New Haven, Connecticut
Mrs. Ward Brown, Lake Worth, Florida
Arthur H. Clarke, Jr., Ithaca, New York
Dr. Rosemary Clarke, Deland, Florida
Dr. and Mrs. William J. Clench, Boston, Massachusetts
Miss Ruth E. Coats, Oceanside, California
Mrs. Z. W. Craine, Norwich, New York
Anthony D'Attilio, Valley Stream, New York
Dr. Charlotte Dawley, Greensboro, North Carolina
Henry Dodge, Scarsdale, New York
Miss Melba B. Doppensmith, Hamden, Connecticut
Dr. William K. Emerson, New York City
Carl W. Erickson, Auburn, Massachusetts
David R. Franz, Philadelphia
Mrs. Robert G. Gibson, Hamden, Connecticut
Dr. Fritz Haas, Chicago, Illinois
Mr. and Mrs. F. Knight Hadley, West Newton, Massachusetts
Lewis R. Hall, Madison, Connecticut
Mr. and Mrs. Ivar Henrickson, Hamden, Connecticut
Mrs. Beatrice B. Hughes, South Hadley, Massachusetts
Mr. and Mrs. William H. Hutchings, Somers, Connecticut
Harlem B. Ives, Detroit, Michigan
Mr. and Mrs. Ralph W. Jackson, Cambridge, Maryland
Mr. and Mrs. George E. Jacobs, New York City
Morris K. Jacobson, Rockaway, New York
Veronica Parker Johns, New York City
Mr. and Mrs. Richard I. Johnson, Chestnut Hill, Massachusetts
Mr. and Mrs. George F. Kline, Madison, New Jersey

Mr. and Mrs. Joseph J. Kuchar, Montvale, New Jersey
Mr. and Mrs. Theophil Kuczynski, Langhorne, Pennsylvania
Dr. Aurèle LaRocque, Columbus, Ohio
Mrs. Charles L. Lewis, Webster Groves, Missouri
Mr. and Mrs. Gordon K. MacMillan, Pittsburgh, Pennsylvania
Arnon L. Mehring, Hyattsville, Maryland
Dr. Edward H. Michelson, Boston, Massachusetts
Donald R. Moore, Ocean Springs, Mississippi
Dr. George M. Moore, Durham, New Hampshire
Mr. and Mrs. Percy A. Morris, New Haven, Connecticut
Dr. Joseph P. E. Morrison, Falls Church, Virginia
Michael Morrison, Falls Church, Virginia
Miss Virginia Orr, Paoli, Pennsylvania
Mr. and Mrs. Alfred J. Ostheimer, 3rd, Whitford, Pennsylvania
Dr. Katherine V. W. Palmer, Ithaca, New York
Dr. E. Laurence Palmer, Ithaca, New York
Dr. Juan Josè Parodiz, Pittsburgh, Pennsylvania
Dr. Henry A. Pilsbry, Philadelphia
Dr. David Pimental, Ithaca, New York
Miss Madeline Ann Pini, Everett, Massachusetts
Mrs. Miriam E. Porter, York, Pennsylvania
Mr. and Mrs. John B. Proetz, Rowayton, Connecticut
Dr. Thomas E. Pulley, Houston, Texas
Earl H. Reed, Hazardville, Connecticut
Robert Robertson, Cambridge, Massachusetts
Miss Anne Rowland, Meadowbrook, Pennsylvania
Jeffrey H. Rudell, New York City
Dr. Jeanne S. Schwengel, Scarsdale, New York
Mrs. Margaret M. Teare, Buffalo, New York
Mrs. Margaret C. Teskey, Marinette, Wisconsin
Mrs. Gertrude W. Thompson, New Haven, Connecticut
Fred Tobleman, Ocean Grove, New Jersey
Dr. Ruth D. Turner, Cambridge, Massachusetts
George Usticke, St. Croix, Virgin Islands
Dr. and Mrs. Henry van der Schalie, Ann Arbor, Michigan
Josef Vagvolgyi, Philadelphia, Pennsylvania
Mr. and Mrs. Henry Van Felix, Otisville, New York
Mrs. Germaine L. Warmke, Mayaguez, Puerto Rico
Dr. d'Alte A. Welch, Cleveland Heights, Ohio
Miss Mathilde P. Weingartner, Staten Island, New York
Mr. and Mrs. Adali B. Wheel, Sr., Syracuse, New York
Mrs. A. Whittemore, Bronxville, New York
Miss Estelle L. Windhorst, Webster Groves, Missouri
Miss Elizabeth M. Wistar, Chestnut Hill, Pennsylvania
Joel T. Wooster, North Haven, Maine
Dr. Charles B. Wurtz, Philadelphia, Pennsylvania
Miss Barbara P. Young, Scarsdale, New York
Max P. Zappe, Hamden, Connecticut

THE AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

Tenth Annual Meeting — May 30 - June 1, 1957
Santa Barbara, California

The meeting was called to order on Thursday afternoon, May 30, by Chairman Edward P. Baker. The following papers were read:

IS THE COLORADO RIVER AN EFFICIENT BARRIER TO MOLLUSK DISTRIBUTION? Dr. S. Stillman Berry, Redlands, California. (Honorary Life Member, American Malacological Union.)

(Abstract)

Attention is drawn to the asymmetrical east-west distribution of certain littoral Mollusca at corresponding latitudes in the upper part of the Gulf of California, and the suggestion is made that one of the operating factors may have been the interposition of an ancient barrier at the head of the Gulf in the form of the Colorado River and delta, with the consequent powerful outflow of fresh or brackish water which until quite recently has prevailed there. The desirability is indicated of further investigation into the validity of such an hypothesis as well as its possible operation and importance relative to other factors.

Turver: "There are more ecological riches at Punta Penasco which is more on the drift side of the Delta." Emerson: "There is most silt and very little life at 40 fathoms; since the dam was built most of the silt is at the head of the Gulf." E. P. Chace: "The scarcity of *Murex* is due to an increase of collectors." Berry: "The shells are there, but the animals are dead or dying." Elsie Chace: "The *Pholads* too are dying or dead." E. P. Chace: "I wonder if there could have been a red tide?"

NOTES ON CYPRAEA. Crawford N. Cate, President of the Pacific Shell Club.

(Abstract)

Two papers were presented, the first a provocative search into the reliability of the species *Cypraea surinamensis* Perry. This cowry was formerly known as *C. bicallosa* Gray. An exhaustive search of extensive reference material, including the Blake Report, 1877-79, which covered the far-flung dredgings in the Caribbean as reported by Dall, has failed to give any conclusive proof or knowledge of this shell. It is true we have seen four specimens of this shell, all dead, but are still not thoroughly convinced of its validity.

The second paper was a review of the differences that separate the genera *Cypraea* and *Trivia*. The factual information in this was based upon the important work of the Englishmen H.O.N. Shaw and his colleague, Professor G. C. Bowne. Their anatomical research established the extremely wide differences that exist in the nervous systems, as well as the equally different structural makeup of the radulae.

NEPTUNEIDAE OF POINT BARROW. Nettie MacGinitie, Newport Beach, California.

Using slides, Mrs. MacGinitie illustrated her paper with scenes of Point Barrow, the research laboratory, boats, and methods of collecting. There where it is often 30 degrees below zero, the beaches are of blackish gravel and the shells are extremely variable in size and weight. Like most Arctic shells they are chalky in consistency and greyish white in color. She distributed mimeographed sheets containing descriptions and figures of various species of *Neptunea* and *Buccinium.*

Emerson: "What accounts for the extreme variation?" MacGinitie: "Extreme cold and lack of other animals; there is a tendency to lose fixed form under such conditions. The great amount of injuries is due to the fact that rocks are constantly falling from the ice above." Kanakoff: "Were the Bryzoans examined?" MacGinitie: "Yes; 130 species have been determined and reported in the literature."

NOTES ON PANOPE GLOBOSA. Elsie M. Chace, San Diego Museum of Natural History.

(Abstract)

Panope globosa was described by Dall as a variety of _Panope generosa._ First collected by Edward S. Palmer, an English physician turned professional botanical collector, it is still known only from the upper part of the Gulf of California. It bears some resemblance to _Panope floridana_ Helprin and I have no record of _Panope generosa_ from inside the Gulf.

Emerson: "*Panope generosa* var. *solida* occurs in the upper part of the Gulf." Turver: "I have found *Panope globosa* near Guaymas."

At this point Dr. Berry produced a beer bottle covered with the eggs of *Callatia* and a vase covered with *Crepidula onyx.* When the vase was collected it contained an octopus with its egg mass. The octopus, egg mass and hatching young were preserved in formalin for examination. These two unusual items had been sent to Dr. Berry by John E. Fitch who was unable to be present.

NEW ZEALAND HALIOTIS VIRGINIA. Robert R. Talmadge, Willow Creek, California.

Mr. Talmadge reported that he has all subspecies and three topotypes. Using a map he pointed out the influence of ocean currents on creating differences in this species of Haliotidae.

On Thursday evening many of those present showed slides of their collecting and travels; and on Friday morning, since the tide was not low enough for good collecting, most of the delegates visited the Santa Barbara Museum of Natural History and the Botanical Gardens.

The annual business meeting was held at the beginning of the Friday afternoon session. The minutes of the 1956 meeting and the financial report were read and accepted. Miss Ruth E. Coats was selected by popular vote to represent the Pacific Division at the 1957 annual meeting of the American Malacological Union to be held in July at Yale University. The following slate of officers was presented by the nominating committee and elected to serve during the fiscal year of 1957-58: Chairman, Albert R. Mead; Vice-Chairman, John E. Fitch; Secretary-Treasurer, Ruth E. Coats.

The following papers occupied the remainder of Friday afternoon:

DISEASE TRANSMISSION IN TERRESTRIAL MOLLUSKS. Dr. Albert R. Mead, University of Arizona.

(Abstract)

A U. S. Public Health grant (E-1245) has made it possible to initiate a program of investigation into the etiology and pathology of a disease syndrome believed to be responsible for the pronounced "decline" in some of the older populations of the giant African snail, *Achatina fulica* Bowdich. The late Dr. Philip W. Weber of the Hawaiian Board of Agriculture and Forestry sent to the author two lots of quick frozen tissue of *A. fulica.* One lot was from specimens having typical symptoms (Cf. *Science,* 123:1130), the other was from symptomless specimens. The experimental animals were 240 adult specimens of *Helix aspersa* which had been kept several weeks in captivity at the University of Arizona under the care of Research Assistant Robert J. Drake. Inocula were prepared from the thawed flesh and introduced into the alimentary canal, the pulmonary cavity, or the haemocoele. The experiments were fully controlled. During the 82 days in which the experiments have run so far, there has been a steady increase in death of the specimens. Specimens inoculated with tissue from *A. fulica* show a 37.5% death rate as against 32.0% for control specimens inoculated with tissue from other *H. aspersa.* The slight difference is not significant and probably can be explained on the basis of the use of "foreign tissue" in preparing the inocula. With the general lack of tangible symptoms, it seems apparent that the etiological agent has not been successfully transferred to *H. aspersa.* Reasons for this rest in the possible fact that the etiological agent did not arrive in a viable state because of the killing or attenuating effect of the freezing or CO_2. A second series which has run only 25 days on an improved diet similarly continues to remain inconclusive. It is planned that a trip will be made to Hawaii during the summer of 1957 to obtain the etiological agent in the viable state for additional series of inoculations. It is proposed that transfers be made to innocuous species and that these in turn be used as vehicles for bringing the live disease agent into this country.

COLLECTING AT SAN FELIPE. Faye B. Howard, Pacific Palisades, California.

Mrs. Howard presented beautiful slides of the San Felipe area and gave to all present a mimeographed copy of her interesting talk.

DOUBLE-TROUBLE IN VIOLET SNAILS. Dr. S. Stillman Berry, Redlands, California.

(Abstract)

The taxonomy of the gastropod genus *Janthina* Lamarck has been in a generally confused state because of the lack of an adequate synthesis of the conflicting and scattered literature. Even the recent excellent monograph by Laursen (1953) is at times imperfect or inconsistent in its application of the priority rule. The first review of the genus that we find subsequent to Lamarck is that of Blainville in his article on *Janthina* in vol. 24 of the Dictionnaire des Sciences Naturelles (1822), where four species are recognized, two of which are described as new. Yet this important contribution has been either overlooked or incompletely considered by nearly all more recent monographers, and to this unfortunate oversight must be ascribed much of the later confusion in names.

The three known Californian species of the genus, all of which are sufferers in this respect, may be summarized as follows:

1. *Janthina janthina* (Linne 1758).

This is the widespread, yet in Californian waters extremely rare, species which has generally appeared in lists and collections under the apparently synonymous names, *communis* Lamarck, *fragilis* Lamarck, and *caeruleata* Reeve. No real grounds for separation of the Pacific form are yet apparent.

2. *Janthina globosa* Blainville 1882.

This is decidedly not the *J. globosa* Swainson 1823, but rather the small, richly colored species which mistakenly appears in our lists as *trifida* Nuttall (a name without validity), *exigua* Lamarck (a quite distinct, sharply sculptured species), or *umbilicata* Orbigny (a junior synonym).

3. *Janthina* cf. *pallida* Thompson 1841.

This large, rotund, pale species of only occasional Californian occurrence, has hitherto been reported (wrongly) as *J. globosa* Swainson. It does not seem quite typical of *pallida,* but larger series from a wider selection of localities are needed for accurate determination of the relationship. In any event Swainson's name is doubly invalid, inasmuch as, being both a synonym (of *prolongata* Blainville 1822) and an homonym, it falls still-born.

SOME ANCESTRAL PORTRAITS OF MOLLUSKS. Dr. George P. Kanakoff, Los Angeles Museum.

COLLECTING IN FIJI. Roscoe O. Stotter, Imperial Beach, California. Mr. Stotter showed beautiful color slides and shell specimens.

The banquet on Friday evening was enhanced by the beautiful table arrangement made by Mrs. Crawford Cate and by shells at each place, the gift of Mrs. F. T. Arnold. As speaker for the evening Dr. Stillman Berry entertained an appreciative audience by reading humorous and nostalgic excerpts from his diary, written when he was a young man just starting to collect shells. Especially interesting were items which concerned some of the old time collectors.

Saturday morning's program:

MOLLUSCAN LIFE AND COLLECTING IN MISSION BAY, BEFORE AND AFTER DREDGING. Roy L. Morrison, San Diego, California.

(Abstract)

Creating a recreational area out of Mission Bay in 1949 necessitated the dredging and overhauling of the Bay and its entire shore line. This destroyed the existing habitats of the Marine Flora and Fauna of the bay. The areas affected were shown by comparing maps of the bay prior to 1949 and as of 1956.

Differences in the number of molluscs collected before 1949 and up to the present time presents the following figures:

A survey completed in 1930 lists 152 species, since then an additional 18 species have been collected bringing the number up to 170. Since 1949 only a little over 50 different species have been collected.

This difference in numbers collected before and after the dredging operations took place is considerable and points out very clearly that when habitats are destroyed the results following are disastrous to molluscan life.

What the future holds for Mission Bay as a collecting ground is difficult to predict.

Mr. Morrison's paper created a great deal of interest, particularly among those who had collected in Mission Bay years ago.

PRINCIPLES OF TAXONOMY IN THE NUDIBRANCHIATA. James R. Lance, Scripps Institution of Oceanography.

(Abstract)

Few malacologists have concerned themselves with the Nudibranchia because the adult forms are shell-less, difficult to collect and preserve and are poorly known taxonomically. The Order may be divided into four Suborders based upon both internal and external features. In the Doridacea the liver is inclosed in the visceral mass and the anal aperture is posterior upon the mid dorsal line and usually surrounded by the branchial circlet. A branched type of liver is present in the Arminacea and the anus and gills are on the right side of the body between the mantle and foot. Rhinophore sheaths with upstanding margins and within which the clubs can be retracted characterize the Dendronotacea. The anal aperture is on the right side and respiration is carried out by a linear series of plumes or tufts situated along the back margins, by a series of papillae joined at their bases and attached to the back margin or by a series of other structures. In the Eolidacea the liver is branched with the diverticula extending into the dorsal papillae. A narrow radula with few teeth is characteristic. The serialization of the radula, the relative positions of the anus, renal and genital apertures and the arrangement of the dorsal papillae constitute the major criteria for subsequent division.

This paper illustrated by beautiful color slides together with the running comments of Mr. Lance created much interest and a better understanding of this little-known group. At the close of the paper, a mignificent color movie film was shown. The close range shots of brilliantly colored sea slugs were truly spectacular.

PTEROPODS OF THE PACIFIC COAST AND NORTH COAST OF SOUTH AMERICA. Dr. Arthur D. Howard, Rivera, California. Read by Edward P. Baker.

Due to illness Dr. Howard was unable to be present to read his paper. It was illustrated and Mr. Baker read Dr. Howard's comments as each slide was shown.

COLLECTING ANEW AT ANAHEIM LANDING. Jean Wilkins, Downey, California.

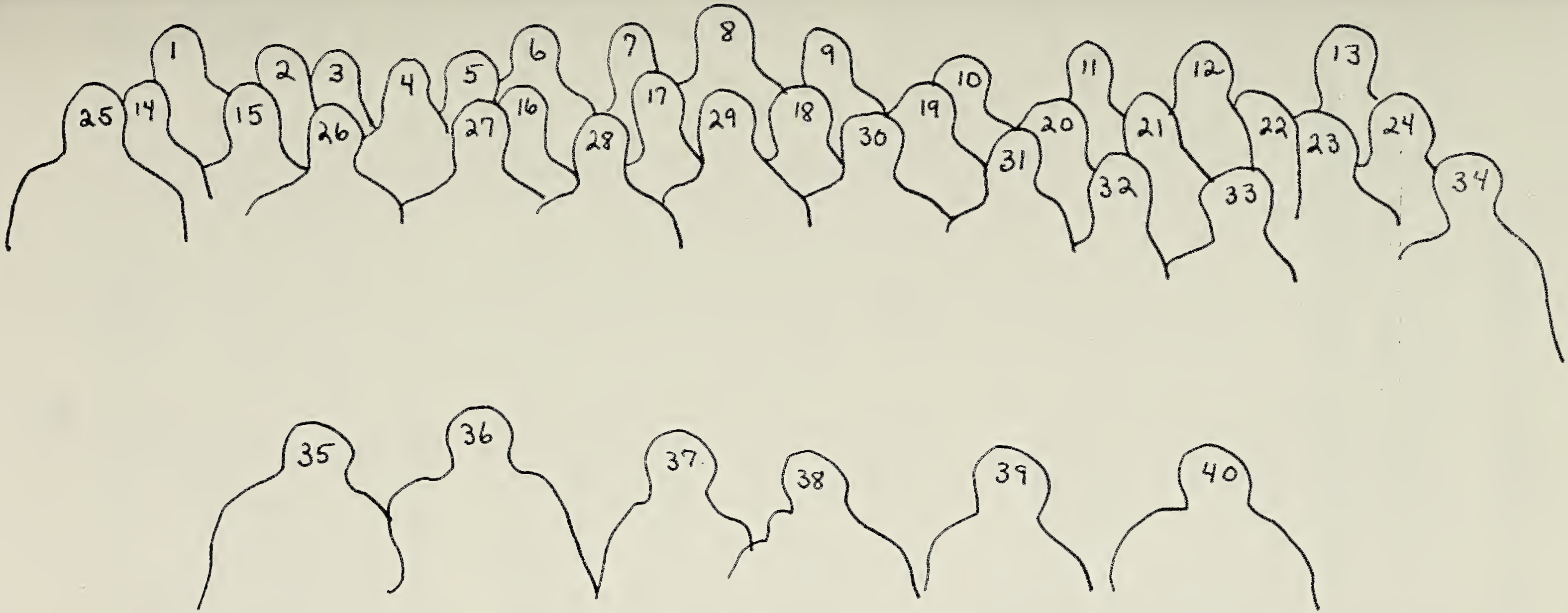
Mrs. Wilkins compared the species of mollusks to be found at Anaheim Landing at the present time with those listed by E. P. Chace. The filling in by rock has effected noticeable changes in the list of species that can be collected in this area, which is one of the old collecting spots of California.

DISCREPANCIES IN DETERMINING THE AGE OF FOSSILS. Dr. Frank Parkhurst, Lynwood, California.

Dr. Parkhurst discussed the contrasting theories concerning the age of fossils.

With this paper another successful meeting of the Pacific Division of the American Malacological Union was brought to a close. Farewells were in order as friends parted for another year; the 1958 meeting is scheduled to be held in the northern part of the state, probably in the San Francisco Bay area, and everybody is urged to attend.

—Tomlinson Studio, Santa Barbara, Calif.



1. Dr. Frank Parkhurst, 2. Dr. William Emerson, 3. F. J. Dietz, 4. James J. Drake, 5. Robert Drake, 6. Harry Turver, 7. John Strohbeen, 8. Munroe Walton, 9. Howard Fletcher, 10. Mrs. Howard Fletcher, 11. Nelson Baker, 12. Mrs. John Burch, 13. Porter Turner, 14. Robert Talmadge, 15. Roscoe Stotter, 16. Mrs. Munroe Walton, 17. Harriet Thomson, 18. Bernice Leland, 19. Mrs. John Strohbeen, 20. Mrs. Harry Turver, 21. Mrs. Ruth Craine, 22. Mrs. Roscoe Stotter, 23. John Burch, 24. Mrs. Porter Turner, 25. Andrew Sorenson, 26. Roy Morrison, 27. Dr. Stillman Berry, 28. Dr. Albert Mead, 29. Edward Baker, 30. Ruth Coats, 31. Mrs. Emery Chace, 32. Mrs. Edward Baker, 33. Mrs. Faye Howard, 34. Mrs. Crawford Cate, 35. George Kanakoff, 36. Emery Chace, 37. Patrick Milburn, 38. Jack Bradbury, 39. John Sibert. 40. Crawford Cate.

REGISTRATION, TENTH ANNUAL MEETING

The American Malacological Union, Pacific Division

Mr. and Mrs. Robert R. Alexander
Mr. and Mrs. Edward P. Baker
Mrs. Myrtle M. Beck
Dr. S. Stillman Berry
Jack W. Bradbury
Mr. and Mrs. John Q. Burch
Mr. and Mrs. Crawford N. Cate
Mr. and Mrs. Emery P. Chace
Miss Ruth E. Coats
Mrs. Ruth A. Craine
Robert J. Drake
Dr. William K. Emerson
Mr. and Mrs. Howard L. Fletcher
Dr. Wendell O. Gregg
Mrs. Faye B. Howard
George P. Kanakoff
James R. Lance
Miss Bernice Leland
Dr. and Mrs. G. E. MacGinitie
Dr. Albert R. Mead
Patrick Milburn
Commander Walter B. Miller
Roy L. Morrison
Dr. Frank C. Parkhurst
John Sibert
Andrew Sorenson
Mr. and Mrs. John P. Strohbeen
Mr. and Mrs. Roscoe O. Stotter
Ray H. Summers
Robert W. Talmadge
Miss Harriet W. Thomson
Mr. and Mrs. Porter M. Turner
Mr. and Mrs. Harry R. Turver
Mr. and Mrs. Munroe L. Walton
Mrs. Jean Wilkins

REPORTS OF MEMBER CLUBS

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Catherine Bradley, Secretary: 1957 marks the sixtieth anniversary of the founding of our club, the oldest of its kind in the United States. And our president is a charter member! We meet at the Buffalo Museum of Science on the third Friday of each month from October to April, at the homes of members during the summer. The first meeting of each year is our annual banquet and business meeting and is held at a local restaurant.

An important part of each meeting is the observation poll, when, as the roll is called, everyone present is expected to contribute something pertinent to the subject of shells. This is followed by a paper by a member or a guest. One very interesting feature of the past year was the account by Miss Gertrude Weber of a trip to Tampa Bay with the members of the St. Petersburg Shell Club. A Shell Quiz, which was entertaining and informative, enlivened a summer meeting. We have become quite interested in the correlation of micropaleontology and conchology in locating present day oil wells; it seems quite remarkable that a minute mollusk which lived millions of years ago can help to find oil today.

Our officers: President, Mrs. Annie Hoffman; Treasurer, Miss Louise Becker; Secretary, Mrs. Catherine Bradley. We always welcome visitors. (Catherine Bradley died September 20, 1957.)

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary-Treasurer: The club meets the second Sunday of each month at the Y.M.C.A., 6th Street and American Avenue, Long Beach, California. During the past year we have held nine regular meetings; in August the annual shell auction was combined with a watermelon picnic and in December we met at the home of one of our members to exchange gifts.

A small directory listing names and addresses of members and of shell clubs was compiled and proved to be very useful. The proceeds from the sale of the club's publication "Shells and Shell Collecting" were given to the Long Beach State College to be used as a revolving student loan fund for students interested in marine biology. A few of these booklets are still on hand; information regarding them or collecting in this area may be obtained from the secretary at 4331 Vermont Street, Long Beach 14. As always, we welcome visitors.

Officers for 1957: Dr. Frank Parkhurst, President; Robert Waller, Vice-President; Ralph Bormann, Secretary-Treasurer.

GREATER ST. LOUIS SHELL CLUB, Vaunita B. Haid, Secretary-Treasurer: The Greater St. Louis Shell Club celebrated its third anniversary last spring by electing new officers and setting up a planned schedule of meetings. In addition to our regular study of shell families, we plan to have a number of guest speakers during the 1957-58 season, as well as having papers delivered by our own members on the various aspects of sea shells and allied fields.

One of the most outstanding activities of our Club during the past year was the presentation of a collection of marine shells to Washington University, of which we are justly proud since it filled a long felt need of our city.

One of our members was invited to set up a sea shell display from her personal collection at one of the suburban branches of the St. Louis Public Library. This attracted much favorable comment as well as bringing us several new members. During the past year, we have had a steady and very gratifying increase in membership.

If any member Clubs are interested in loaning or renting colored slides or movies on sea shells or other marine subjects, we would greatly appreciate hearing from them.

Again, may we extend a cordial invitation to anyone visiting in St. Louis to inspect the world wide marine shell collection in Brookings Hall, Washington University, or plan to attend one of our monthly meetings which are held at 8:00 P. M. on the first Tuesday of each month.

THE HAWAIIAN MALACOLOGICAL SOCIETY, Karl W. Greene reporting: The past year has been a busy and a prosperous one. Membership is at its highest level, with approximately 235 members.

The meetings were so well attended that it was found necessary to secure larger quarters, and a change was made from the Aquarium to the auditorium of the Kapahulu branch of the Public Library. There was no change of date, with meetings still being held at 7:30 p.m. on the first Wednesday of each month. The annual banquet is held in December, and an outdoor picnic and field trip usually in July. The October and April meetings are devoted to a semi-annual Shell Auction at which donated shells and shells on consignment are sold. The affair is held not so much for financial gain as to afford members a chance to add to their collections. At the regular meetings interesting programs are presented, followed by a "gabfest" during which: shells are identified; our SCUBA users and skin divers display their latest catches; many exchanges are initiated, if not completed that evening. The Society-sponsored Hawaiian Shell News for the current month is also available at the meetings. The Hawaiian Shell News now goes to almost as many outside of Honolulu as to local members. Through the efforts of the Shell News many more members are being interested in research work in connection with various shells, and many interesting facts have been developed, especially through the efforts of our SCUBA members.

Dr. Harald A. Rehder, curator, Division of Mollusks, U. S. National Museum, Washington, D. C., spent a busy day in Honolulu, enroute on a collecting tour in the Society Islands. He inspected as many collections as his stay would allow, and was the guest of a number of the local members at a noon luncheon.

Alison Kay, one of our members and a native of the Island of Kauai, was awarded her Ph.D. in June, 1957, by the University of Hawaii, for her research work on the Cypraeidae.

The Society is preparing for its First Annual Shell Fair, during "Aloha Week," (an annual Honolulu Festival), October 20 to 25, 1957. This is the most ambitious project ever tackled by the local club, but the members are practically 100% back of it, and all are working hard. Awards will be made in some 16 different classes. It is hoped to exhibit something illustrating the many uses of shells and activities in which shells are concerned.

Visitors to Honolulu anytime during the year can find out when and where the next meeting will be held, or placed in touch with local collectors by telephoning the Aquarium, 2777 Kalakaua Avenue.

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Virgil Herring, Recording Secretary: Our club has had a busy and enjoyable year. The membership has increased to seventy-five. The present officers are: John Saxby, President; Edwin Allison, Vice-President; Virgil Herring, Recording Secretary; Mrs. Reginald Machado, Corresponding Secretary; Mrs. Lucille Zellers, Treasurer; Dr. Rudolph Stohler, Librarian. We meet on the first Tuesday of each month at 8:00 P.M. in the Life Sciences Building at the University of California in Berkeley. Our 1957 program to date is outlined below.

In January, Miss Evelyn Wilson read the historian's summary of the 1956 activities. Mrs. Lucille Zellers analyzed a questionnaire poll of members' interests as a guide for planning future activities. Mrs. Gladys Archerd described and displayed twenty-five shells from her collection.

In February, Mrs. Lucille Zellers displayed and discussed the principal members of the Strombidae.

In March, Edwin Allison displayed and discussed twenty-five kinds of sand dollars from the Paleontology Museum collection. Ray Summers discussed methods of collecting, cleaning and storing *Cypraea*. His collection of 146 species was remarkably beautiful.

In April, Dr. Joan Steinberg discussed collecting at Heron Island Marine Institute on the Great Barrier Reef and other Australian shores during a year's study on a Fullbright Fellowship. In the movies and slides which illustrated this talk the nudibranchs and tectibranchs were especially beautiful. Dr. and Mrs. Bendheim displayed 25 of their shells.

In May, Dr. Jens M. Ostergaard outlined highlights of 90 years' collecting in Hawaiian seas. His talk emphasized the maternal protection given the eggs by the female *Cypraea* during the 14 to 18 day incubation period. Dottie Carr displayed shells from her collection.

In June, Mrs. Lucille Zellers discussed primitive and modern man's uses of mollusks and their products. Dee Smith arranged decorative displays of dried seaweeds, corals and shells for the home. Marianna Paulson, Lucille Zellers, Betty Babbit and Mr. Ney displayed their specialties in making shell jewelry.

In July, Mrs. Marianna Paulson displayed and discussed *Terebra* and *Conus*.

In August, John Saxby displayed and discussed many beautiful shells. Dr. Rudolph Stohler displayed and discussed some very rare California shells. A movie in sound and color which showed marine animals of the Great Barrier Reef concluded the evening.

In September, Allyn G. Smith discussed his vacation and collecting trip on four of the principal Hawaiian Islands.

SAN ANTONIO SHELL CLUB, Isabell Ernest, President: Ours is the first shell club to be organized in Texas; it is now two years old and at present we have 35 members. We are always looking for new members who are sincerely interested in shells. Those willing to work are especially welcome since we hope to do many things in the future years.

We meet every other month at the homes of members, go on field trips to the coast, have all-day get-together sessions when we meet to identify and exchange shells.

The first edition of our new quarterly paper "Shell Notes" will appear in November.

PHILADELPHIA SHELL CLUB, Mary Abbott, Secretary: The Philadelphia Shell Club completed its second year on June 15, 1957 with a picnic at Ocean City, New Jersey, at the summer home of Mr. and Mrs. Eliot Hanscom. At the close of the year we had 156 members, 127 of which were attending members, and 29 corresponding members.

Our club has attempted to have guest speakers on widely different subjects. Mr. Alfred J. Ostheimer spoke on "The Cruise of the Schooner *Gloria Maris* in Dutch New Guinea"; Dr. Ruth D. Turner on "The Role of the Shipworm in History"; Dr. Horace G. Richards on "The Pleistocene Mollusks of the Philadelphia Area." Dr. Alan Kohn showed his remarkable colored films of cone snails harpooning and eating fish. Dr. Irving Kagan spoke on "Parasites of Land Mollusks." Dr. R. Tucker Abbott showed a color, sound movie of underwater life in the Bahamas, and gave a talk on the distribution of West Indian marine mollusks.

Our club held three participation evenings: one a donation auction which added $207 to our treasury; one an exchange and give-away night; and the third, a member's symposium on collecting methods. Our usual attendance, barring snowstorms and hurricanes, is from 50 to 60 members and guests.

The main lectures given during the year are published in the Proceedings of the Philadelphia Shell Club which also contains a complete list of members, our Constitution, and interesting notes and news. The Proceedings are distributed free to all members, and may be purchased by non-members for $1.00. Our club also made a number of new shell publications and books available at dealer's discounts, and gave away surplus, 100-year-old prints of shells.

The officers elected for the coming year are: Dr. Charles B. Wurtz, President; Mr. John D. Parker, Vice-President; Mr. Eliot B. Hanscom, Historian; Dr. R. Tucker Abbott, Editor; Mrs. R. Tucker Abbott, Secretary-Treasurer; Dr. H. Burrington Baker and Mrs. Winifred Zerne as Councillors. Dr. Henry A. Pilsbry is our Honorary Life President.

BOSTON MALACOLOGICAL CLUB, Dorothy J. Culligan, Secretary: We meet the first Tuesday of each month from October through May at the Museum of Comparative Zoology, Harvard University. Traditionally the October meeting is an informal one at which time members tell of collecting experiences over the summer months. For the other meetings we usually have a speaker, sometimes a member, sometimes a guest. The following made up last year's program: "Shell Collecting in New Zealand," Dr. Raymond Foster; "Teredos in History," Dr. Ruth Turner; "Men, Mollusks and Medicine," Dr. Edward Michelson; "The Biology of the Bimini Islands," Dr. William Emerson; "The Geology of Mexico," Miss Alice Caras; "The Natural History of Abaco," Robert Robertson; "Collecting in the Rivers of Northern Florida," Dr. William Clench. Our annual outing was held in June at the Parker River Wild Life Reservation, Plum Island.

The following officers elected for 1957-58: President, Dr. Henry Russell; Vice-President, Dr. Edward Michelson; Secretary-Treasurer, Dorothy Culligan; Councillors-at-Large, Dr. George Moore, Andrea Fessenden; Conchological Recorder, Joseph Rosewater.

THE NEW YORK SHELL CLUB, Catherine Ahders, Secretary: Our club, now in its ninth year, boasts more than 75 members who contribute to our meetings and benefit from them. The meetings are held one Sunday each month from September to June at 2 P. M. in the American Museum of Natural History.

During the 1956-57 season we were honored by three guest lecturers. The first was Dr. Ruth Turner who spoke on the history of conchology in eastern United States and gave us some interesting sidelights on the lives of famous men in the world of shells. Our second guest lecturer was Dr. William Emerson who showed us films of marine life in Bimini, Bahamas, and the methods of research used. Our final speaker for the season was Dr. Alan Kohn who showed us films from his research on the stinging varieties of the cone shells.

Among the papers presented by members during the year were: "A History of the Club," Dr. Walter Jacobs; "Observations on the Egg Cases of *Polinices*," Mr. and Mrs. Raeilhe; "Land and Fresh Water Molluscs of Union County, N. J.," Mr. Freed; "Slugs," Dr. Edward Karlin; and "Ecological Ridges of the Seashore," Miss Mathilde Weingartner. Several members reported on trips they had taken: Mr. and Mrs. Raeilhe collecting in Florida; Miss Ahders collecting in Beaufort, N. C.; Mr. Katsaras trading among the Florida shell dealers; and Mr. George Jacobs viewing the museums and private collections in Europe.

This year has also seen the continued publication of the *New York Shell Club Notes* on a monthly basis. Regular features, such as "Some Rarer Shells" by Mr. D'Attilio, have been joined by the "From Our Correspondents" section and the minutes of the meetings.

Other notable events of the year included Mr. Usticke's generous invitation to members of the club to visit his home at the end of the September meeting and help themselves to specimens he had collected from the Caribbean area over a number of years.

Our annual auction was a second noteworthy event. We auctioned material from dealers who, in turn, received a portion of the proceeds. The highlight of the auction was the drawing for the door prize donated by Mr. Nick Katsaras. Mr. Fred Cannon won the beautiful *Pleurotomaria hirasei*.

Our third event was a true innovation. With Mr. Anthony D'Attilio doing the honors, we held our first identification clinic on *Cypraeacea*. The clinic was highly successful. Many members now have labels for their cowries and clues for future identification.

For our annual field trip the club hired a bus to take the members to Jones Beach, Long Island. Though the collecting was not too good, the trip was a success with about 40 members attending.

ST. PETERSBURG SHELL CLUB, Gertrude E. Brakefield, Corresponding Secretary: The St. Petersburg Shell Club meets in the Assembly Room of the City Hall on the second and fourth Friday of each month; our year begins in November and visitors are always most welcome.

Ten meetings were held last season, all well attended. At each of these meetings talks are given on a family of shells. Reports of collecting trips are given; those to Mexico and the Keys were most interesting. Mr. and Mrs.

Theophil Kuczynski told of attending the Buttonwood Farm Shell Auction, illustrating with color slides. Three scheduled social events were enjoyed: at the Christmas party in December gift-wrapped shells were exchanged; the annual picnic was a shelling excursion to Mullett Key; and finally a very pleasant meeting was held at the St. Petersburg Historical Museum as guest of the Curator, Mrs. Oma Cross.

Field Trips, again under the leadership of Mr. Alger P. Blaine, were held whenever tides and weather permitted.

The annual Shell Show is of course the highlight of the entire season. The 1957 show was the tenth and included not only Florida shells but those from all over the world. The Smithsonian Institution Award was won by Dr. R. L. Alsaker for his display of more than 130 species and subspecies of Volutidae. Most prized by Dr. Alsaker is *Cottonia nodiplicata* Cox, a colorful specimen in perfect condition. The 1958 show will be held as usual in the Treasure Island Auditorium from February 26 through March 3rd.

These officers were re-elected for 1956-57: President, Mrs. Nellie Coleman; 1st Vice-President, Mr. Murry E. Reed; 2nd Vice-President, Miss Gertrude M. Weber; Treasurer, Mr. A. W. Fahrenbruck; Recording Secretary, Mrs. Barbara Steger; Corresponding Secretary, Mrs. Gertrude E. Brakefield.

THE PACIFIC SHELL CLUB, Crawford N. Cate, President: The Pacific Shell Club of Los Angeles concluded its fourteenth year with well over a hundred members. The club is sponsored by Dr. Howard R. Hill of the Los Angeles County Museum. Officers for 1956-57 were: C. N. Cate, President; Dr. Homer King, Vice-President; Isaac Cowgill, Treasurer; Mrs. R. L. McWilliams, Secretary.

In addition to the traditional Christmas party and May picnic, the programs included the following topics: "The Tides," by Dr. Homer King; "Effects of Teredos and other Bivalves in L. A. Harbor," by Carroll Wakeman; "Collecting in Florida and West Mexico," by Mrs. Lawrence Carter; "West Coast Collecting," by Ned Baker; "The Volute Family," by C. N. Cate; "The *Venus* Clams," by Dr. Howard R. Hill; "Collecting in the Fiji Islands," by R. O. Stotter; "An Introduction to Bivalves," by C. N. Cate; and "Collecting Experiences in Europe and Mexico," by Mr. and Mrs. E. W. Ulrich. All of these programs were illustrated either by color slides or shell specimens. At our picnic meeting, Mr. Ulrich surprised us all with a remarkable magic show.

A Junior Pacific Shell Club was started in April under the direction of Mrs. James Leyh. This group is composed of the younger members of the club, through high school age; they will meet at the same time as the regular club, but in another part of the Museum. We expect some fine work to be done by this group next year.

The new officers for the year 1957-58 are as follows: Mr. Ralph Hall, President; Mr. Arnold Johnson, Vice-President; Mrs. R. L. McWilliams, Secretary; Isaac Cowgill, Treasurer.

The Pacific Shell Club meets at the Los Angeles County Museum on the third Sunday afternoon of each month, October through May. A cordial invitation is extended to all A.M.U. members, their families and friends to attend whenever possible.

CONNECTICUT SHELL CLUB, Gertrude W. Thompson, Secretary: We meet once each month at Peabody Museum at Yale University. Ours is the only shell club in Connecticut so our 32 members live not only in New Haven and its suburbs but in several neighboring cities. Mr. Percy A. Morris is President.

It is always a treat when Dr. Clench and Dr. Turner meet with us as they do once each year. We also enjoyed the visit of Alan Kohn who talked to us about the Marshall Islands, and Leo McAllister who told of shell collecting on the coast of Texas. William Hutchins talked of tree snails of the Florida Keys, displaying his choice collection. Finally, we always enjoy hearing fellow members describe their travels, sharing their collecting experiences by looking at their pictures or specimens of the shells themselves.

The late Heathcote Woolsey's splendid shell collection has been given to the Peabody Museum. Mr. Morris has promised that when they are arranged the Club will have the opportunity to see them. Mr. Morris was asked to pack a collection of fossils, which had been given to the Museum, in Orlando last winter.

The Club plans to start a collection of New England shells. A box of fine shells was taken to the Hartford School for the Deaf.

Much of our Spring meetings was devoted to planning for the annual meeting of the American Malacological Union which was held in July at Yale University. We were happy to see so many shell people from all over the country; it was a treat to meet them and perhaps many of us will meet again in Michigan in 1958.

Publications of the American Malacological Union

SCIENTIFIC CONTRIBUTIONS MADE FROM 1882 TO 1939
by HENRY A. PILSBRY, Sc.D. ....1940: 63 pp., $1.00

HOW TO COLLECT SHELLS..1955: 75 pp., $1.00
(Order from American Malacological Union, c/o Buffalo Museum of Science, Humboldt Parkway, Buffalo 11, New York.)

ANNUAL REPORT BULLETINS, AMERICAN MALACOLOGICAL UNION. Have been issued since 1932 and sent without cost to members. Back issues may be purchased for $1.00 and (before 1950) $1.50. Order from A.M.U. secretary.

CONSTITUTION OF THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the by-laws. Life membership may be purchased for the equivalent of twenty years' annual dues, with no further annual dues required. Honorary membership may be bestowed by an unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.
4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, Publications Editor, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact by-laws that interpret this Constitution, and such by-laws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.

BY-LAWS

1. The annual dues shall be two dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.
2. The President shall be empowered to appoint a nominating committee and such other standing and special committees as may be deemed advisable.
3. A nominating committee shall consist of not less than three nor more than five members of the Council, exclusive of existing officers. The duties of this committee shall be to prepare a list of nominations of officers and councillors-at-large for the ensuing year to be elected in accordance with Article 4 of the Constitution, this list to be presented at a business meeting of the Council held during an annual meeting of the American Malacological Union. No member shall be nominated for any office without his or her prior notification and consent.
4. A quorum of five council members is necessary before business may be transacted at any meeting of the Executive Council.

THE AMERICAN MALACOLOGICAL UNION
EXECUTIVE COUNCIL
1957-1958

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Officers

President	Aurele LaRocque
Vice-President	R. Tucker Abbott
Second Vice-President	(Chairman, A.M.U.P.) Albert M. Mead
Secretary-Treasurer	Margaret C. Teskey
Publications Editor	George M. Moore

☆

Councillors-at-Large

Emery P. Chace
Ralph W. Dexter
Percy A. Morris
Katherine V. W. Palmer

☆

Past Presidents — Permanent Council Members

Paul Bartsch (1933)
William J. Clench (1935)
Joshua L. Baily, Jr. (1937)
Maxwell Smith (1939)
Horace B. Baker (1940)
Harald A. Rehder (1941)
Louise M. Perry (1943-1945)
Henry van der Schalie (1946-1947)
Myra Keen (1948)
Elmer G. Berry (1949)
Fritz Haas (1950)
J. P. E. Morrison (1951)
Jeanne S. Schwengel (1952)
Joseph C. Bequaert (1954)
Morris K. Jacobson (1955)
Allyn G. Smith (1956)
Ruth D. Turner (1957)

☆

PACIFIC DIVISION
Officers

Chairman	Albert M. Mead
Vice-Chairman	John E. Fitch
Secretary-Treasurer	Ruth E. Coats

NOTES AND NEWS

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Since 1940 the American Malacological Union has been an associate of the American Association for the Advancement of Science. This year (1957) the status of the Union was changed to that of affiliate. This entitles the AMU to representation on the Council of the AAAS, a listing in such publications as the program directory of the annual meetings, etc. Members of the AMU are invited to become members of the AAAS and to attend the annual meeting in Indianapolis on December 26-30, 1957. Dr. Charlotte Dawley has been appointed to represent the AMU as a voting member for the 1957-58 period.

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1957 seems to have been "Visit Hawaii" year. Dr. Harald Rehder opened the season when he stopped off in March for one day only, on his way to collect shells in the Society Islands. He was entertained at a luncheon given by several members of the Hawaiian Malacological Society.

Mr. and Mrs. Allyn G. Smith were the next representatives from the mainland. Then Mr. and Mrs. John Q. Burch and Mrs. Z. W. Craine spent the last week of April and the first two weeks of May in Honolulu. They are reported to have called on every person, establishment or organization where shells were to be seen or discussed. Mrs. Craine made a side trip to Kauai.

Early in June Dr. Albert R. Mead, Mrs. Mead, daughter Ruthie and son Jimmy arrived to stay until September; Dr. Mead spent the summer months on work connected with the giant African snail.

Finally, in July Mr. and Mrs. Crawford N. Cate spent two weeks with friends in Honolulu. Although both were bitten by the Asiatic flu bug they managed to salvage enough of their vacation to bring back a glowing account of the hospitality and generosity of the Hawaiian people together with plenty of shells.

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Because of an unusually crowded schedule, time did not permit questions nor discussion from the floor of a majority of the papers read at the 1957 meeting. The discussion which did follow a few of the papers has been omitted in the report on pages 2 to 19. The secretary will welcome the opinion of members as to the value of a verbatim account of such discussion and will be so guided in reporting on future meetings.

Malacologists are a hardy lot. Enroute from her Buffalo, New York, home to attend the 1957 meeting, Mrs. Eliot Armstrong slipped in a motel bathtub (in Bath, N. Y.!) and bruised her side. It is to be assumed that she was too engrossed in events at the meeting to feel pain; in any event, upon returning home her discomfort increased and it was only then discovered that she had broken two ribs.

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"Extend my greetings to all with the message that I am working constantly on my late husband's monograph, The Opistobranch Mollusca of the Pacific Coast of North America; I hope to have it in print before too many months." (From a letter from Olive (Mrs. Frank M.) MacFarland).

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"The report of my death has been greatly exaggerated"; Mark Twain said it and so did Frank Lyman. At the New Haven meeting the rumor was spread about that Frank's name was to be added to those of departed members. To verify records a note was dispatched to Mr. Lyman's address in Dozier, Alabama. Back came a card which said, "Very much alive, all of us. Have two grandsons, one just a week old. Having fun, feeling fine and often think of my shell collector friends."

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In the report of the twenty-second annual meeting the statement appears that the specimens of *Haliotis sorenseni* distributed as gifts to delegates were collected by Mr. John P. Strohbeen and named for Mr. Andrew Sorensen. This was an error, insomuch as the beautiful shells were not only named for Mr. Sorensen but were collected by him—hence the gift was entirely his own.

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The 1958 annual meeting will be held early in September at the University of Michigan, Ann Arbor, Michigan; the date and place of the Pacific Division meeting is still to be determined. Details of both meetings will be mailed to members early in 1958.

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A second edition of *How to Collect Shells* is being prepared. Advertising space is available at nominal rates and anyone having shells, books or services which they desire to place before the public are invited to contact the secretary before January 1, 1958.

ACTIVE MEMBERS

[Membership List Revised December 1, 1957]

Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.
Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.
Ahders, Catherine, 125 W. 76th St., New York 23, N. Y. East coast shells.
Ahern, Mrs. Thomas, 8082 Cheyenne Ave., Detroit 28, Mich.
Akers, Mrs. Frank G., Box 133, Naples, Florida.
Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.
Alexander, Mrs. Robt., 8542 Lemon Ave., La Mesa, Calif.
Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.
Allen, Dr. J. Frances, Dept. of Zool., Univ. of Maryland, College Park, Md.
Allen, Lester E., 187 Argyle St., Yarmouth, Nova Scotia.
Allen, Miss Letha S., 5703 43rd Ave., Apt. 4, Hyattsville, Md. Mollusks in general.
Allison, Edwin C., Dept. Paleontology, U. of Calif., Berkeley 4, Calif. Fossil, recent and mega-micro marine invertebrates.
Ames, Margaret Dale, 17 East 89th St., New York City.
Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.
Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.
Anderson, Russell H., 2117 5th St., Alameda, Calif.
Arias, Sergio, Sociedad de Ciencias Naturales La Salle, Apartado 681, Caracas, Venezuela. All mollusks of neotropical regions.
Armstrong, Mrs. Eliot, 681 Lafayette Ave., Buffalo 22, N. Y. Collecting.
Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y
Athearn, Herbert D., R.F.D. No. 5, Cleveland, Tenn. Fresh water mollusks.
Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. Land shells.
Atmus, Rudolph E., 239 Pease Rd., E. Longmeadow, Mass. Land snails, esp. *Polymita* and *Liguus.*
Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.
Averre, Mrs. Wm. V., Apt. Postal 709, Caracas, Venezuela.
Awald, Clifford J.,162 Southwood Dr., Kenmore, N. Y.
Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.
Baker, E. P., 11619 Downey Ave., Downey, Calif. Exch. Pacific Coast shells.
Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.
Baker, Nelson W., Santa Barbara Museum of Nat. Hist., Santa Barbara, Calif. General interest.
Balch, Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.
Bales, Mrs. Blenn R., 149 West Main St., Circleville, O.
Ballard, Wm. Lewis, 458 Shannon Dr., S.W., Atlanta, Ga.
Bardwell, Mrs. Elizabeth, Box 1276, Rockport, Texas. Gulf Coast shells.
Bartlett, Mrs. R. D., 200 Cedar Croft Rd., Baltimore 12, Md. E. coast shells Md. to Fla.
Bartsch, Dr. Paul, Smithsonian Institution, U. S. National Museum, Washington 25, D.C. Residence, "Lebanon," Gunston Hall Rd., Lorton, Va.
Bass, Mr. and Mrs. J. Louis, Jr., Medlin Heights Rd., Fountain City, Tenn. Murex and pectens.
Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. Exchange.
Bayer, Frederick M., Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.
Beatty, George D., R. 1, Sandusky, O. Land and f.w. mollusks of Great Lakes region.
Beck, Mrs. R. G., 422 So. Vine St., Escondido, Cal.
Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Becraft, David T., 34 Harbison, National City, Calif.

Bedell, Mrs. Adele Koto, 1421 Roosevelt Ave., Beloit, Wisc.
Bell, Miss Vashti, 528 South Erie, Wichita 16, Kansas.
Bengston, Mrs. Geo., 1802 Falls Ave., Waterloo, Iowa. Land, freshwater, fossils.
Bennett, Bob, Vinalhaven, Maine. Shells of Maine.
Bequaert, Dr. Joseph C., Biology Dept., Univ. of Houston, Houston, Texas.
Berg, Dr. Clifford O., New York College of Agriculture, Cornell Univ., Ithaca, N. Y.
Berger, Mr. and Mrs. John, "Tanglewood," R. R. 3, Angola, Indiana.
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Bissell, Mrs. Frances LaDue, 131 Morningside Dr., Milford, Conn.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Bippus, Alvin C., Jr., 1918 Bayard Pl., Toledo 6, O. Col. Marine univalves.
Bixby, Mrs. H. M., Look See, Captiva, Florida.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Bolin, Velma and Bart, 6757 Lemoran, Rivera, Calif. West Coast marine gastropoda.
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Mrs. Margaret Carlson, 399 Washington St., Woburn, Mass.
Bourgeois, Miss Marie E., 3a Tiziano 35, Mixcoac D. F., Mexico.
Bradbury, Jack W., 2037 Miramar Drive, Balboa, Calif. Marine invertebrates.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Bradley, John C., 469 Farmington Ave., Waterbury 10, Conn. Travel and collect.
Brakefield, Gertrude E., 3830 7th St., No., St. Petersburg, Fla.
Brewster, Miss Helen, 333 5th St., So., St. Petersburg 5, Fla.,
Broekel, Ray, 1051 Grove St., Jacksonville, Ill. General interest.
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Brooks, James C., Jr., 194 Riley Ave., Macon, Ga. Atlantic and Caribbean gastropods.
Brown, J. J., 502 E. 42nd St., Austin, Texas.
Brown, Mr. and Mrs. Ralph M., 2807 Pruden Drive, Fountain City, Tenn. Cones and murex.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Bruce, Anthony, 90 Doat St., Buffalo 11, N. Y. Printer.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Burch, John Bayard, Div. of Mollusks, U. of Mich., Ann Arbor, Mich.
Burch, Mr. and Mrs. John Q., 1584 W. Vernon Ave., Los Angeles 62, Cal.
Burch, Dr. Paul R., Rockville, Virginia.
Burke, Mrs. Clara, 2121 So. Simpson St., Philadelphia 42, Penn. School collections.
Burton, Helen A., 391 Adams St., Oakland 10, Cal.
Butler, R. B., 1121 Putnam Ave., Plainfield, N. J. Marine shells, recent and fossil.

Cabot, Robert. W., 1068 Main St., Stanford, Conn.
Cahoon, Ruth Mary, 1173 Gulfstream Ave., Sarasota, Fla. Exchange, collect.
Caribbean Shell Shop, P.O. Box 311, Sarasota, Fla. Commercial and specimen shells.
Carlson, Mrs. Margaret F., 399 Washington St., Woburn, Mass.
Carpenter, Capt. Walter N., Box 15, A.P.O. 108, New York. General; exch.
Carr, Frank B., 12 Bull Mt. Rd., Asheville, N. Car. General interest.
Casey, Mrs. Robert. V., 1208 W. Big Bend, Kirkwood 22, Mo. Fla. W. coast shells.
Cashman, Marjean, 7 No. Beechwood Ave., Catonsville, Md.
Castellanos, Dr. Jose R., Virtudes 258, Dep. 110, Habana, Cuba. Marine mollusks.
Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Blvd., Los Angeles 49, Calfi. *Cypraea, voluta,* Japanese shells.
Chace, Mr. and Mrs. Emery P., 3446 Van Dyke Ave., San Diego 5, Calif.
Chamberlin, Dr. J. Lockwood, U. S. Fisheries Station, Millville, Delaware.

Champion, Dr. Merrill E., Museum of Comp. Zool., Cambridge 38, Mass.

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Sheafer, Clinton W., P.O. Box 2194, Del Ray Beach, Fla. Conidae; Cassididae; Argonautidae.

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Young, Barbara P., 10 Old Lane, Scarsdale, N. Y. Tropical freshwater snails.
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A. M. U., Twenty-fourth Annual Meeting

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THE AMERICAN MALACOLOGICAL UNION
TWENTY-FOURTH ANNUAL MEETING
ANN ARBOR, MICHIGAN, SEPTEMBER 2-6, 1958

The 1958 annual meeting was an unqualified success; many of those who attended recalled the equally pleasant meeting at Ann Arbor twenty-one years earlier. This still-young organization is beginning to develop traditions and a return to the place of an earlier meeting in twenty years or so is becoming one of them. Old friends greet one another, then unite in bidding welcome to the newcomers who themselves will return another year, and another.

Sixty-five were registered, and nearly all took advantage of the excellent facilities provided by the University of Michigan in the modern and spacious men's dormitory known as South Quadrangle. Host Henry van der Schalie had been forced to make his reservations a year in advance, so popular are these facilities which included comfortable bedrooms, fine food, a private lounge and a meeting hall more than adequate — all these beneath one roof.

The entire seventh floor had been set aside for the use of the visiting malacologists. Bedrooms and the ever-popular lounge were here, while the dining room on the first floor and Club 600 which was the meeting room in the basement were reached by two "step lively" elevators. Probably no single feature of the four-day period will be recalled more vividly than will this pair of impatient automatic lifts.

At 1:30 Tuesday afternoon following the morning-long registration period President Aurele LaRocque called the 24th annual meeting to order. He introduced Dr. Theodore H. Hubbell, Director and Curator of Mollusks, Museum of Zoology, University of Michigan.

Dr. Hubbell extended a cordial welcome on behalf of the University. He remarked that many of his listeners were former students of the University of Michigan and that they, especially, would find many things of interest about the campus. "Much work in the field of malacology has been done here which is of great benefit on local, national and international levels. You are all cordially invited to visit the University Museums. I hope that the papers you are about to hear will be instructive, your banquet tasty and that you all will be happy that you came!"

In returning the thanks of the AMU, President LaRocque said that among his happiest recollections were those of the 1937 meeting: "If this one is as pleasant as it has been already, it will be a success." He then introduced the first paper:

SMALL BEGINNINGS by Adlai B. Wheel, Syracuse, New York.

Standing before a sizable exhibit of shells, minerals, butterflies and other natural history material in Riker mounts placed on a folding framework which displayed them to advantage, "Captain" Wheel explained that in working with the Boy's Club of Syracuse, New York, he is dealing with embryonic scientists. The boys constructed all the displays, which, when not in use during his frequent lectures are on exhibit in the small boy-staffed museum of the Boy's Club.

He closed with what he termed the same old two-fold plea: "Please DO NOT brush off the child who asks questions but take time to help him find the answers. Please DO NOT discard as worthless anything which may be of interest to a child with his God-given thirst for knowledge." Captain Wheel said the boys of Syracuse want and need not only duplicate shells, but natural history material of every kind.

DISTRIBUTION AND COLOR PATTERNS OF *CEPAEA HORTENSIS* AT CAPE ANN, MASSACHUSETTS by Ralph W. Dexter, Kent State University, Kent, Ohio.

(Dr. Dexter's paper was illustrated by a projected map of Cape Ann, Kodachromes of the localities in which his collections were made and charts which illustrated the relationship of pattern to localities and populations.)

(Abstract)

The land snail *Cepaea hortensis,* known at Cape Ann since the 1837 report of Binney, was collected in the summers of 1951 and 1954-58. Fifteen colonies of various sizes were located. These are all on the rim of Cape Ann not far from salt water and located primarily in the southern half of the Cape Ann area. Typical habitats are small islands and rocky headlands where rank or decomposing vegetation are found. A total of 17 color patterns was discovered in the total collection of 4801 specimens. The most common types are as follows: five bands (i.e. 1-2-3-4-5), 50%; no bands (0-0-0-0-0), 45%; band 2 missing (1-0-3-4-5), 2%; band 3 missing (1-2-0-4-5), 1%; band 3 only (0-0-3-0-0), 0.9%; and bands 1 and 2 united ([1-2]-3-4-5), 0.5%. Three colonies had only bandless snails, two colonies had only 5-banded and bandless patterns; one island had only bandless snails, while another had few other than 5-banded ones. In contrast to these, one colony had 12 color patterns, and two other colonies had seven patterns each. A field experiment has been initiated to establish two new colonies, each with a single color pattern. Future observations will determine if a pure line can be propagated in the field or whether various patterns will be inherited from a common phenotype.

Discussion—H. B. Baker: "Do you know whether this species is introduced or native?" Dexter: "We are not sure. At first I thought it was an introduced species, but Dr. Clench has fossil shells from the lower layers of Indian kitchen middens." Baker: "On the other hand, Dall stated that it is definitely an European species brought in the ballast of ships." Clench: "Our specimens were found in a kitchen midden in Nova Scotia. Carbon 14 tests have not yet established the age, but they may be from the Pliocene. In that case I doubt that they came from Europe." Morrison: "May we regard Dall as an authority on this matter? I never saw the shells on which he based his opinion." Dexter: "It is true that all colonies known to date in North America are on islands and rocky headlands—never far from salt water. If they were introduced, I am inclined to believe it was a natural introduction rather than by man." Solem: "Are you planning to check on the work of Cain and Shepherd in regard to predator-prey relations and survival according to color pattern?" Dexter: "I have not planned this far ahead in my study. So far I have collected only to determine the geographical distribution and the color pattern found at Cape Ann."

PRELIMINARY REPORT ON ABYSSAL ATLANTIC MOLLUSKS FROM THE THETA AND VEMA EXPEDITIONS by Arthur H. Clarke, Jr., Cornell University.

(This paper was accompanied by projected maps, charts, photographs of the two ships and kodachrome close-ups of some of the mollusks brought up in their dredges.)

(Abstract)

During the past 90 years some 20 oceanographic research vessels from about 10 nations have engaged in extensive biological investigation of the deep sea. At the present time only the American R/V VEMA and the Russian ship VITYAZ are devoted to this purpose. Since 1953 the R/V VEMA and the M/V THETA, both of the Lamont Geological Observatory,[1] Columbia University, have dredged extensively throughout the abyssal regions of the South Atlantic and to a lesser extent in the North Atlantic, the Indian Ocean, and elsewhere. A good collection of mollusks has been obtained.

The following generalizations are derived only from the material collected, but since they agree with data in other reports they probably apply, at least in broad outline, to abyssal mollusks as a whole.

1. Abyssal mollusks are usually small, pale, and fragile. The mean length of specimens seen is approximately 3 mm., and size comparisons with species in the same genera inhabiting shallower depths show a tendency toward smaller size with increasing depth. This is not in agreement with Zenkevich and Birstein[2] who report increased size with greater depth for abyssal animals.
2. Most abyssal bivalves belong to groups known to be detritus feeders. The abyssal gastropods are largely predators.
3. Characteristic abyssal groups include Trochidae *(Seguenzia)*, Turridae, Malletiidae, Ledidae, Poromyidae, Cuspidaridae, solenogastres, and scaphopods.
4. Paleozoic groups are often abundant in the deep sea (e.g. taxodonts, trochids, and scaphopods), but relatively recent groups are abundant also (e.g. septibranchs and turrids), and the average geologic age of deep sea families is close to that of shallow water families.
5. Zenkevich and Birstein[2] have stated that trench populations are highly endemic. Unless gross errors in sampling of a widespread heterogeneous population have prejudiced the results, which seems unlikely, the present data indicate the presence of a significant degree of endemism in the major ocean basins. Among the 113 species taken from the Argentine Basin, Scotia Sea, Agulhas-Cape Basin, and Angola-Guinea Basin, 96 species were found in only one basin, 13 were found in two or in three adjacent basins, and four occurred in non-adjacent basins. Thorson[3] has shown that abyssal bottom animals have non-pelagic larvae. Therefore such endemism probably would be brought about by substrate preferences functioning as isolating mechanisms.
6. If the "endemism" is due to a sampling error then we must believe that the abyssal fauna is much more diverse than ever before suggested. Only additional and intensive sampling will provide us with the answer.

[1] Ewing, M. and B. C. Heezen, *Geographical Review* 46:508 (1956).

[2] Zenkevich, L. A. and J. A. Birstein, *Deep-Sea Research* 4:54 (1956).

[3] Thorson, G., *Biological Reviews* 25:26 (1950).

Discussion—Baker: "How large are the lots on which you based your conclusions?" Clarke: "They averaged 5 or 6 specimens each." Baker: "So small a sample is not very statistically significant." Clarke: "Abyssal mollusk populations are sparse and specimens in quantity are hard to get. In some cases the lots *are* large." Baker: "Even though statistical proof be lacking, your conclusions may still be correct." Van der Schalie: "Were you able to save the animals?" Clarke: "Yes, in most cases. I plan to dissect the animals and determine their food sources." Morrison: "Do you think the recent elements of the abyssal fauna are there because they are largely carnivorous?" Clarke: "Yes, I do." LaRocque: "I hope that you continue such work. It is of great interest to geologists and paleontologists as well as to this group, and I look forward to its publication."

CYPRAEA MUS NEEDS ATTENTION by Crawford N. Cate, Los Angeles, California.

(Mr. Cate accompanied his remarks with a Riker mount of the species in question and illustrated on maps of the Caribbean area and of Africa the divergent localities where collections have reportedly been made. Since this paper was also read at the prior Pacific Division meeting, the abstract appears with the report of that meeting.)

Discussion—Morrison: "Much misunderstanding has arisen because the early collectors were poor spellers or had poor memories. This reminds me of the case of the guinea pig. A mix-up in spelling resulted in this animal which is endemic to South and Central America, being named for the Guinea Coast of West Africa instead of the Guiana Coast of South America." Clench: "No other region in the world is so rich in endemic material as is the northern coast of South America, yet its limits are not sharply defined. We know that *Cypraea mus* occurs within these limits, while the African and other records are vague. As in so many other cases a mistake may have been made, copied, and then when it appeared in print was accepted. However, many West Indian species do occur in West Africa, especially those whose larvae undergoes a free-swimming stage." Cate: "Yes, I can see how such a mistake may have been made. I am glad that I brought the problem east. The contributions you all have made are greatly appreciated."

A MONOGRAPH THAT NEEDS TO BE PUBLISHED by Morris K. Jacobson, Far Rockaway, New York. (Read for Mr. Jacobson by Margaret Teskey.)

(Abstract)

Drs. Torre and Bartsch have prepared a massive work on the urocoptids of Cuba, a genus which nowhere else in the world is as richly developed as here. This work will certainly do for the urocoptids what previous works have done for the annularids and cyclophorids. We have here a huge mass of material well worked over by experienced and trained scientists. It represents a vast amount of dedicated and intelligent work, and, if the history of the earlier monographs can serve as a guide, will clarify and systematize the urocoptids in a manner that heretofore has seemed impossible. Even if in the future more or less serious errors will crop up (as in which work do they not?) it still cannot be doubted that here at least we will have a solid point of departure, a secure bridge head, to work on one of the most puzzling groups of Cuban shells.

For these reasons I make an earnest appeal to the AMU to do what it can to get this great work published, or at least to arouse the proper authorities who are in charge of such matters.

Discussion—H. B. Baker: "This was discussed at the Council meeting of an annual meeting some years ago. I don't recall the conclusion."

JULIA ELLEN ROGERS by Crawford N. Cate, Los Angeles, California.

Mr. Cate read an obituary of Julia Rogers and concluded with a single kodachrome slide of Mr. Cate and Miss Rogers in which she held a large specimen of *Cassis rufa*. Mr. Cate stated this was the only shell she owned!

Julia Ellen Rogers, author of THE SHELL BOOK, died on May 20, 1958 in her 93rd year at her home in Long Beach, California.

She was born in LaSalle County, Illinois and with her family lived many years in Iowa where she was an honor graduate from Iowa City Academy and the State University of Iowa. She spent two years at Cornell University where her first book AMONG GREEN TREES earned her master's degree and election to Phi Beta Kappa in 1902. It introduced the author to Doubleday, Page and Company who had embarked on a great series called "The Nature Club" and for which she produced the two standard works of reference THE TREE BOOK (1905) and THE SHELL BOOK (1908). Among her other books are WILD ANIMALS, EARTH AND SKY, TREES and others of the "Every Child Should Know" series which are out of print. Through the years THE TREE BOOK and THE SHELL BOOK have held their interest for students and beginners alike. Miss Rogers celebrated her 85th birthday with the revised edition of THE SHELL BOOK; Drs. Bartsch and Rehder recommended the revision of nomenclature, but not the text, "which is just as fresh and stimulating today as when it was first written."

Julia Rogers moved to Long Beach, California in 1912, where she was an active member of the Browning Club, the Agassiz Club, Women's City Club, sponsor of the Long Beach Shell Club, and served the community for ten years on the Board of Education. She was a member of Pi Beta Phi and served on the National Board as secretary for two years and was president of the New York Alumnae for two years. She had traveled extensively, exploring by motor most European countries, and in 1935 made a world tour which included the Orient, South Africa and South America.

METHODS FOR STUDYING PLEISTOCENE NON-MARINE MOLLUSCA by Aurele LaRocque, Ohio State University.

(This paper was illustrated with projected charts, graphs and maps.)

(Abstract)

The majority of older studies on Pleistocene Mollusca are qualitative rather than quantitative. A list of species present in a deposit is given, rarely with information on the relative abundance of each species or the distribution of species in the various parts of the deposit. In these lists, the malacologist can recognize land, amphibious, and freshwater species which obviously could not live together in the same environment. It is obvious that in such mixed assemblages the land snails were washed in from the surrounding land and that some of the species were carried by running water from one environment to another. In some deposits, association of even freshwater species is patently impossible as the lists contain species of deep, still water and others that thrive only in shallow water. Lists of Mollusca from all units of a Pleistocene section often lump together the shells from totally different environments and are therefore almost worthless from an ecologic or stratigraphic standpoint.

Several Pleistocene deposits in Ohio have been studied in the last few years by stratigraphic and quantitative methods that yield interesting results. The methods are simple and resemble the techniques employed for pollen analysis. The collecting is done from a measured and described lithologic section divided into successive layers 2 x 12 x 12 inches. Adjustments in thickness are made so that no layer overlaps the boundaries between two lithologic units. Each sample is washed and the Mollusca are sorted individually to species. Graphs are constructed showing the percentage of abundance of total Mollusca and of individual species. Variations in abundance are studied and interpreted to show relationships of the following factors to time and lithology: (a) variation of numbers of total Mollusca; (b) variation of proportions of land, amphibious, freshwater lung breathers, and freshwater gill breathers; (c) relative abundance of each species; (d) relationship of decrease or increase of each species with that of other species.

Results of these studies yield information on the development and extinction of ancient lakes, which may be called paleolimnology; general principles applicable to the ecology of extinct lakes; and correlation of Pleistocene deposits on the basis of Mollusca.

Studies of this kind are continuing at the Ohio State University; results of four of them will appear in full in the near future; and a summary of two of them is presented in papers by M. B. Reynolds and J. A. Zimmerman in this report.

Discussion—Berg: "Did you find the peat layer in all lakes?" LaRocque: "No, it was roughly 50-50. Some lakes may have drained so rapidly that vegetation with resulting peat didn't have time to be established." Baker: "Did you get samples of species with wide apertures? If so you may have evidence of deep water species." LaRocque: "The gastropods in these deposits have apertures of normal size for each species involved and the geologic evidence indicates that the lakes were never more than 20 to 25 feet deep." Clarke: "How long did it take to establish the ratio of high-spired lung breathers to low-spired lung breathers?" LaRocque: "We're just beginning our study on that level." Clench: "How do you account for the increase of gill breathers over lung breathers?" LaRocque: "Gill breathers are small, hence easily dispersed. Also remember that those early lakes were *cold*. Later when they warmed up and filled with vegetation the environment was more favorable for lung breathers." Clarke: "Also you need vegetation for the lung breathers to get to the top." Morrison: "I question this theory of dispersal of lung breathers. *Amnicola* for instance when disturbed drops to the bottom, whereas *Lymnaea* rises and so had a greater chance for dispersal by natural means, say in bird feathers."

Berry: "The wind blowing against a floating shell could also be a dispersal factor." Van der Schalie: "Why not run similar tests on recent lakes with recent species and correlate the two?" LaRocque: "We're doing that now." Berg: "Why couldn't *Physa* and *Lymnaea* have risen to the surface as they do in an aquarium?" Baker: "Remember that a fifty foot depth is different than the conditions in a laboratory aquarium." Morrison: "I doubt that these snails came to the surface of their own volition." Baker: "It is possible to train mollusks to breathe under water. Take *Lymnaea contracta* for instance; if they came to the top they'd have a hard time getting back down." LaRocque: "We know from lab work that many generations of *Lymnaea stagnalis* never see the top of the water." Clench: "*Lymnaea* lives in the Swiss lakes at 800 meters depth." Hubricht: "And again, such rising snails would have been in danger of being eaten by fish."

* * * *

This paper completed the formal session of the opening day. The Executive Council met during the evening. Concurrently, the lounge was the setting for much informal discussion, friendly argument, and display of shells for admiration and for information. Such personal contacts keynote these annual meetings and establish the camaraderie which causes favorable comment on the part of every newcomer.

* * * *

Wednesday's scientific papers follow, with a muster for a group photograph during the lunch hour:

PLEISTOCENE MOLLUSCAN FAUNAS OF THE HUMBOLDT SITE, ROSS COUNTY, OHIO by Martin B. Reynolds, Ohio State University. (Read for Mr. Reynolds by Aurele LaRocque.)

(Abstract)

The Humboldt deposit is exposed in the walls of Buckskin Creek valley at Humboldt, Paint Township, Ross County, Ohio. It consists of lacustrine marls and clays about 10 feet thick between two tills of Wisconsin age. The molluscan faunas consist of 5 species of *Pisidium,* 2 of *Sphaerium, Amnicola leightoni* (F. C. Baker), *Campeloma* sp., cf. *C. rufum* (Haldeman), *Ferrissia tarda* (Say), *Fossaria obrussa decampi* (Streng), *Gyraulus altissimus* (F. C. Baker), *Helisoma anceps striatum* (F. C. Baker), *H. trivolvis* (Say), *Menetus opercularis multilineatus* (Vanatta), *Physa gyrina* (Say), *Promenetus exacuous* (Say), and *Valvata tricarinata* (Say).

Variations in abundance for each species were plotted from collections 12 x 12 x 2 inches in volume, taken from a measured section of the deposit. Sixteen thousand shells were sorted and identified from these collections. *Gyraulus altissimus, Helisoma anceps striatum, Amnicola leightoni,* and *Valvata tricarinata* are indigenous to the deposit and the other species are intruders from nearby environments. The quantitative distribution of the Mollusca is closely related to minute lithologic changes. Variations in abundance of each species from bottom to top of the deposit reflect minor changes in environment. The absence of land snails from this deposit is remarkable. It may be due to the fact that the collections were taken from a point some 150 feet from the shore of the lake.

Discussion—Van der Schalie: "Have you attempted to date this material?" LaRocque: "Yes, we have wood specimens undergoing Carbon 14 tests in Washington right now."

PLEISTOCENE MOLLUSCAN FAUNAS OF THE NEWELL LAKE DEPOSIT, LOGAN COUNTY, OHIO by James A. Zimmerman, Ohio State University.

(Accompanied by projected drawings illustrating method of sectioning marl deposits.)

(Abstract)

The Newell Lake deposit lies in a buried kame field in Union Township, Logan County, Ohio. Detailed analysis of the molluscan faunas of the marl and peat deposits, with emphasis on quantitative distribution, demonstrates changes in environment. The faunas were collected at two-inch intervals in a vertical section twelve inches square. Additional samples were taken from other places in the deposit from which the stratigraphy was determined. The marl was washed from the samples, the remaining organic material was dried, and the Mollusca sorted and identified. Approximately 1,000 individuals were picked at random from each two-inch collection, the specific assemblage and the percentage of each species was determined; the volume of total Mollusca and of the other organic material (primarily vegetation and shell fragments) was measured and the total molluscan population in each collection was calculated. Analysis of these data yields the quantitative distribution of each species and shows those that are considered indigenous, by virtue of their relative abundance, to the area of the collections within the deposit. On the basis of specific ecology and quantitative distribution, the changes in environment to shallower water with an increase in vegetation during the period of deposition at the site of the collections and the changes in the position of the shoreline of the lake were determined. The faunas of the Newell Lake deposit are compared with several other faunas, both living and fossil. The Newell Lake deposit is assigned a Wisconsin age on the basis of the faunas discussed and the presence of extinct species (*Amnicola leightoni, Helisoma anceps striatum, Gyraulus altissimus,* and *Fossaria obrussa decampi*). Surrounding surficial deposits and faunas compared suggest that the earliest date for initial development of the lake was late Wisconsin.

Discussion—Baker: "Have you come across evidences of fire?" Zimmerman: "No; however, in connection with this work we do hope to run pollen analyses to obtain information on the nature of the vegetation surrounding this deposit."

CHROMOSOMES OF AQUATIC PULMONATE SNAILS (BASOMMATOPHORA) by John B. Burch, Museum of Zoology, University of Michigan.

(This paper was illustrated by projected slides in microscopic detail.)

(Abstract)

The Basommatophora are of considerable interest because of their wide distribution and variation, and because many are important vectors of human parasites. The systematics of the lower taxonomic categories still remains an enigma, both from the practical viewpoint of identifying species, and in understanding the mechanisms of speciation and evolution. Cytogenetic and cytotaxonomic studies in this group are rare and for the most part unreliable. In the present investigation 30 species and subspecies have been studied using standard cytological techniques. Ovotestis material was sectioned and stained by the Feulgen reaction following fixation in the solution of Sanfelice, and acetic-orcein squashes were prepared following fixation in Newcomer's fluid. Duplicate shells have been deposited in the collections of the U. S. National Museum and the Museum of Zoology, University of Michigan.

In the North American Melampidae (= Ellobiidae), Lymnaeidae, Planorbidae, and Physidae the basic haploid chromosome number appears to be eighteen. This is the number found in *Melampus bidentatus lineatus, Detracia floridana, Lymnaea stagnalis jugularis, Stagnicola palustris elodes, S. palustris desidiosa, S. umbrosa, S. reflexa, S. exilis, S. catascopium, S. emarginata serrata (= angulata), S. (Hinkleyia) caperata, Acella haldemani, Pseudosuccinea columella, Bulimnea megasoma, Fossaria parva, F. modicella, Helisoma anceps, H. (Pierosoma) trivolvis, Taphius (= Australorbis) glabratus, Promenetus exacuous, Gyraulus deflectus, Physa sayii crassa, P. gyrina, P. (Physodon) anatina,* and *Aplexa hypnorum.* However, nineteen is the haploid number found in *Fossaria modicella rustica* and thirty-six in *Gyraulus (Torquis) circumstriatus;* the latter probably is a tetraploid. Supernumerary chromosomes were found in one population of *Gyraulus deflectus* and chromosomal bridges and fragments during the first meiotic anaphase in another population. Three species of the Ancylidae were investigated, *Ferrissia tarda* ($n = 17$), *F. parallela* ($n = 30$), and *F. (Laevapex) fusca* ($n = 17$). *Ferrissia parallela* may also be tetraploid.

Polyploidy and aneuploidy appear to be rare in basommatophoric snails and are probably not major factors in speciation and evolution in this group. Earlier indications of polyploidy (based on numbers reported for *Physa gyrina* and *Melampus boholensis)* are due to erroneous observations.

There appears to be a basic distinction between the number of chromosomes of snails belonging to the Basommatophora and those of the Stylommatophora, the former having haploid numbers less than twenty, the latter more than twenty. This has been pointed out by previous authors. However, these two groups cannot be distinguished on the basis of the morphology of their mitotic metaphase chromosomes, both having medianly or submedianly constricted monocentric chromosomes.

Any hypothesis concerning the origin of the Basommatophora must take into account their remarkable chromosome constancy. Since the Stylommatophora differ from all other molluscan groups in that its species are characterized by greater number of chromosomes, it is difficult to visualize land pulmonates as ancestral to the freshwater lung-breathers, since the transition involves gain of chromosomes with land specialization and subsequent loss of chromosomes with adaptation to fresh water.

This investigation was supported by a research grant (E-952) from the U. S. Public Health Service.

Discussion—Baker: "Have the chromosomes of *Siphonaria* been examined?" Burch: "Yes, those of *Siphonaria japonica* were studied in Japan. The haploid number reported was sixteen. However, this study was made using sectioned material and although done by a reliable worker, should be checked. I am dubious of chromosome numbers reported from such material. Not all of the chromosomes separate at the same time during meiotic metaphase-anaphase and this makes exact counts difficult. Squash techniques, so common in plant taxonomic studies, have been slow to be adopted by most animal taxonomists. I am apparently one of the first to use them with this group of mollusks." Baker: "Have you compared the chromosomes of any of the pupillids?" Burch: "Not yet, but this would be an interesting group to work with."

EVOLUTION OF PREDATOR-PREY RELATIONSHIPS IN SNAIL-KILLING SCIOMYZID LARVAE (DIPTERA) by C. O. Berg, B. A. Foote and S. E. Neff, Cornell University.

(Illustrated by kodachrome slides of fly eggs, larvae, puparia and adults, some being on or within snail shells.)

(Abstract)

[1] The investigations reported here and in the following abstract were supported by a research grant (E-743) from the National Institute of Allergy and Infectious Diseases, Public Health Service.

Snail-killing larvae of the family Sciomyzidae range from quick-killing, aquatic predators to terrestrial, parasitoid species so intimately and delicately associated with the food snail that they feed on it for five or six days before killing it. The overt predators obtain fresh food by frequently killing another snail, and each larva may destroy more than a dozen snails belonging to different pulmonate families. By contrast, a newly-hatched larva of the most intimately associated parasitoid species enters the shell to which its egg is attached and does not leave it again until it emerges as an adult fly from the puparium formed within that shell. It seems that larvae of at least some of these species may conserve the available food for their own use by killing all other larvae that try to enter the shells that they occupy. Although several predatory larvae commonly feed together in one shell, we have found from one to twenty-five eggs of *Pteromicra inermis* on each shell without once finding more than one living larva in each. This circumstance seems especially significant since dead larvae are frequently found in the aperture, near the living larva.

The gap between the two extremes is bridged by species having habits intermediate between them. Some species have slow-killing, intimately associated larvae which stay in a single snail shell throughout larval life, yet they leave the shell and crawl into the ground for pupation. In other species, both larvae and pupae remain within the shell, but the eggs are laid on vegetation. Some of the species in this group appear to be host-specific, but others clearly are not.

Both the overt predators and the most intimately associated parasitoids seem to be so well specialized for their own ways of life that it is difficult to conceive of either group giving rise to the other. A more logical hypothesis would seem to be that both have arisen, by divergent evolution, from a common ancestor with intermediate, and less fixed, habits.

A living species illustrates some of the characteristics that the common ancestor may have had. In *Atrichomelina pubera,* pupation occurs both within and outside of snail shells, and eggs are laid both on shells and on vegetation. Larvae remain within shells even when not feeding just as typical parasitoid larvae do, yet leave them if the food supply becomes exhausted and forage about in search of other snails. Several larvae feeding together kill quite rapidly, but a single larva operates as a parasitoid, sparing the life of its victim for a few days. These larvae are not host-specific, but neither do they have the aquatic adaptations of the typical predators. Finally, larvae of *A. pubera* seem better able than any other sciomyzid larva we know to live on putrescent snails.

Since so many dipterous larvae of other families are scavengers on decaying animal matter, such a general scavenger in moist habitats might well have been the common ancestor of the Sciomyzidae. Increased feeding on snails, a readily available and relatively defenseless source of food, may have led to the inclination to attack and ability to kill living snails. Divergence into two evolutionary lines may then have produced both the aquatic predators and the terrestrial parasitoids, the species of intermediate habits illustrating some of the probable steps in the evolutionary process.

Discussion—Karlin: "You mentioned the predatory Tetanocerinae and the parasitoid Scimyzinae. Don't the biological categories ever cross taxonomic lines?" Berg: "Yes, but about ninety percent of the biologically known Tetanocerinae are predatory and all of the known sciomyzine larvae are parasitoids." Taylor: "What degree of host-specificity do you imply?" Berg: "We use that term provisionally. If we always find a given larvae in the same species in nature and note that it doesn't mature when we try to rear it on other species in the laboratory, we are tentatively calling it host-specific." Taylor: "But if a larva is associated only with a given species of snail in your locality, might it not prey upon some closely related species in another part of its range?" Berg: "Quite possibly. In fact, the right answer to your first question may be that our observations *suggest* a specificity that may in the final analysis prove to vary from the species to the family level. Because the predators and less specialized parasitoids attack non-operculate snails in a wide variety of families both in the laboratory and in nature, these intimately associated larvae may be confined to a single species, genus or family."

PRELIMINARY TESTS OF THE ABILITY OF SCIOMYZID LARVAE (DIPTERA) TO DESTROY SNAILS OF MEDICAL IMPORTANCE by C. O. Berg and S. E. Neff, Cornell University. (Illustrated.)

(Abstract)

Snails that are intermediate hosts of human schistosomiasis in various parts of the world were exposed in the laboratory to the attacks of predacious, aquatic sciomyzid larvae. The snails were confined with the larvae in one-ounce, wide-mouth jars which contained either water or moist sand. Twelve species of snails included in the genera *Oncomelania, Bulinus,* and *Biomphalaria* and fly larvae of six species in the genera *Sepedon, Dictya,* and *Tetanocera* were used. No convincing differences were observed in the efficiency of larvae of the different genera tested, so results are not reported separately for each genus.

Biomphalaria spp., hosts of *Schistosoma mansoni* in various tropical and subtropical regions, seem very vulnerable to attacks of these larvae. Species of this genus are the logical first targets if foreign introductions of Sciomyzidae are to be attempted for biological control of schistosomiasis. There have been 472 snail deaths and 42 larval deaths (11.2:1) in the experimental jars. This larval mortality is no higher than that routinely experienced when larvae are being reared on local snails. Individuals of *B. glabratus (= Australorbis glabratus)* grow larger than the other species tested and apparently are not quite so easily killed. Totals of 289 snail deaths and 27 larval deaths for this species (10.7:1) compare with 183 snail deaths and 15 larval deaths (12.2:1) for the smaller species tested *(B. centimentradis* and five Eastern Hemisphere species).

Success of the larvae against *Bulinus* spp., hosts of *S. haematobium* in Africa, has been only moderate, our exposures having resulted in 232 snail deaths and 63 larval deaths (3.7:1). Although the larvae usually manage to kill these snails, they frequently also die soon after, and apparently as a result of, these encounters. This larval mortality may be caused by asphyxiation resulting from the covering of spiracular openings by the copious and viscous slime so characteristic of *Bulinus.* Relative sizes of larvae and snails are very important in determining the outcome of these exposures. An experiment using fully grown (third instar) larvae and snails of all stages of development resulted in the deaths of 41 *B. truncatus* and only two larvae.

Test results of only one dead snail and 26 dead larvae indicate that sciomyzid larvae would not be effective in controlling *Oncomelania* spp., Oriental hosts of *S. japonicum,* and other operculate snails. After sinking their mouth hooks into the flesh of extended snails, attacking larvae were pulled, head first, into the aperture as the injured snails contracted violently. Then the operculum was pulled shut so forcibly that the larvae were almost severed transversely across the thorax.

Mortality rates in water deeper than the length of the larvae indicate that larvae are only slightly less efficient in quiet water than on moist sand. In tests using identical species of *Bulinus* and *Biomphalaria,* there were 220 dead snails and 48 dead larvae on sand (4.6:1) and 90 dead snails and 22 dead larvae in water (4.1:1). A snail attacked in water expels the air from the mantle cavity and sinks. If the attached larva is thus pulled beneath the surface, it must soon abandon the snail and float back up to

its air supply. However, a larva is sometimes seen hanging, head downward, from the surface film, feeding on a dying snail impaled on its mouth hooks. A bubble large enough to support somewhat more than the weight of the larva is present in its gut. The resistance of the hydrofuge posterior spiracular disc against being pulled down through the surface film, added to the buoyancy supplied by this bubble, is then sufficient to support both larva and snail.

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[1] We are indebted to personnel of the Laboratory of Tropical Diseases, National Institute of Allergy and Infectious Diseases, Public Health Service, for the use of their snails and facilities in the tests reported here.

Discussion—Basch: "Are the adult flies injurious to humans?" Berg: "Almost certainly not. They are not attracted to man nor to his food, and they almost never enter buildings. In fact, they seldom leave the immediate vicinity of the larval breeding site." Clarke: "I'm greatly impressed by the kodachromes proving that larvae hanging from the surface film are quite capable of killing snails even in deep water. This ability multiplies by several times my estimate of their potential usefulness." Berg: "Yes, this certainly is significant. We must admit, of course, that larvae can kill larger, heavier snails on land than in water." Berry: "Do the adult flies rest on the shore?" Berg: "They rest primarily on vegetation, especially on the sedges, grasses, and cattails emerging from shallow water, but also on these plants growing at the edges of ponds and in marshes that are moist but not flooded." Berry: "Do the aquatic sciomyzids always occur in standing water?" Berg: "Usually, but not always; they also breed in slow flowing streams." Berry: "Doesn't *Australorbis* occur in some fairly rapidly flowing water?" Berg: "Yes, this snail breeds in some Puerto Rican streams that get well scoured during each rainy season. No doubt, these larvae would then be thoroughly flushed out, just as the snails are. However, the streams appear to be reseeded each year by snail populations in the headwater marshes. If so, self-perpetuating colonies of Sciomyzidae in these marshes might appreciably reduce even the snail populations of streams." Solem: "Do sciomyzid flies occur naturally in Puerto Rico?" Berg: "Two species of *Sepedon* occur there, but they seem to have quite spotty distributions." Karlin: "Have you determined exactly how the snail is killed?" Berg: "Not positively. Although they hemorrhage profusely and most likely bleed to death, we haven't eliminated the possibility of injection of some toxic agent that might be produced by the larval salivary glands." Clarke: "Do you want larvae-infested snails from all possible localities in this country?" Berg: "We certainly do. Anyone mailing such shells, packed loosely in damp moss, will earn our sincere gratitude, and we'll be happy to refund air mail postage."

GUNDLACHIA IN MICHIGAN by Paul F. Basch, Museum of Zoology, University of Michigan.

(Illustrated with blackboard drawings of the anatomy and shell of the mollusk.)

(Abstract)

The discovery of *Gundlachia*-like shells in Michigan has led to a review of all of the species which have been described under this name.

On the basis of what is known about the geographic distribution, shells, radulae, and anatomy of these mollusks, it is concluded that *Gundlachia* does not represent a natural genetic group, but rather an assemblage of ecologically induced similarly directed variations, each referrable to a sympatric non-septate ancylid species.

Discussion—Baker: "Pilsbry and I argued for years over this. I have always agreed with you." Basch: "Yes, Pilsbry considered the ability to form a septum to be of taxonomic significance. But since we can't be sure what ancylids can't form a septum under certain conditions I'm inclined to consider it a problem of nomenclature. Aguayo calls *Gundlachia ancyliformis* and *Hebetancylus havanensis* synonymous; in that case *Gundlachia* has priority." Parodiz: "M. I. H. Scott in Argentina says that *Gundlachia* and *Ancylus* are the same thing." Dexter: "Walker found them in Illinois but later when the stream dried up could find no more." Hubricht: "I found them in Virginia in a permanent running stream; it was Spring and so the septum may have been due to the Winter rest."

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Since this was the first annual meeting since the death of Dr. Henry A. Pilsbry a part of Wednesday afternoon's session was dedicated to his memory. His old friend and colleague Dr. Horace B. Baker led off by summarizing the long and useful life of this greatest of American Malacologists.

AN APPRECIATION OF DR. PILSBRY'S WORK ON LAND SNAILS

by Horace B. Baker, University of Pennsylvania.

(Abstract)

Dr. Pilsbry will live on forever, by means of his books and papers, in his ramifying influence throughout the world. Although none of us can hope to equal his many scientific contributions, we all together may try to fill in some of the gaps he has left. But, of course, the biggest gap is his personal absence from among us.

Discussion—Dr. William J. Clench in relating some of his personal recollection told of making a trip with H.A.P. in 1930 into the Florida Everglades in search of *Liguus*. "Though more than thirty years his junior I was hard put to keep up with him. His ability to sleep under any conditions was phenomenal. On that trip we captured a rattlesnake (Pilsbry wanted it!) that had four fangs. He was truly a man to lean on when classifying. At MCZ we have correlated all names which he introduced into the literature—more than 8,000! I am proud to have been his friend."

The Reverend H. B. Herrington told of meeting Pilsbry at the National Academy of Sciences in 1954 and of being amazed at his vitality. "We drove to Cape May; he stood the trip better than I."

Van der Schalie: "I recall first meeting him while doing work as a student. I displayed a chiton with six plates, anticipating his interest. He was interested — in the label. Remarked that there were three things wrong: the genus, the species and the locality!

Crawford N. Cate said that he would always regret never having met Dr. Pilsbry. He mentioned that at the recent meeting of the AMU Pacific Division Al Mead mentioned letters written to Dr. Joshua Baily and to Allyn Smith only a few days before his death.

Mrs. H. B. Baker: "I visited him in the hospital in September just before his final trip to Florida; I took some galley proofs which he read at once."

Aurele LaRocque: "Henry A. Pilsbry was a real American, not merely a native of America. In his bibliography he touched every one of the North, Central and South American states, countries or provinces. I met him first in 1935. Though not then a citizen of the United States, I felt that I knew him since he had been so very generous to Canada. Later I learned that he was the same to all."

STUDY ON ANCYLIDAE by Paul F. Basch, University of Michigan Museums.

(Illustrated by projected drawings of microscopic sections and photographs of the shells.)

(Abstract)

This paper dealt mainly with the anatomy of *Ferrissia (Laevapex) fusca* (Adams). Although in many respects it is similar to other ancylids previously investigated, there are some important differences. Black pigment forms a hollow core inside the two tentacles and is also generally distributed over the dorsum of the mantle. The pseudobranch consists of two lobes: a small upper anal lobe which bears the terminal portion of the rectum and the anus, and a much larger subtending respiratory lobe. The anal lobe is interpreted as the homologue of the entire auriform lobe found in other ancylid snails. The homologies of the respiratory lobe are uncertain, but may be represented by the extensions of the lower boundary of the mantle aperture in some planorbids. The respiratory, digestive, excretory, and nervous systems are in general similar to other ancylids and other basommatophores in general. The parts of the reproductive system are mostly larger than corresponding organs in other species of ancylids. The ovotestis has 20 or more follicles. The seminal vesicle is unusually large; albumen, nidamental, and prostate glands are all characteristic for *F. fusca.* The male penial complex lacks a flagellum and the penis shows an "ultra-penis" arrangement.

The subgenera *Laevapex* and *Ferrissia* are probably not closely enough related to remain within the same genus, but any taxonomic changes should be deferred until a more thorough study of other species can be made.

Discussion—Berry: "Why the muscle of the stomach wall? Don't they rasp and thus masticate their food?" Basch: "I've tried to analyze the stomach contents but beyond diatoms I couldn't determine much." Berry: "What is the function of the flagellum?" Basch: "I don't think that anyone really knows. It is so variable among groups." Berry: "I am impressed by the similarity between this group and *Bulinus;* parts of the anatomy, especially the verge, are quite similar. Also, the pseudobranch is similar to *Bulinus.*" Basch: "Yes, that's a fact and most interesting. And *Ferrissia fusca* is more like some planorbids than like some other ancylids." Baker: "Do you always find grains of sand in the stomach?" Basch: "Usually, in nature. I don't really know why."

THE MORPHOLOGY OF *LYMNAEA EMARGINATA SERRATA* HALDEMEN WITH REMARKS ON THE SYSTEMATICS OF LYMNAEIDS by Harold J. Walter, University of Michigan Museum of Zoology.

(Distribution charts on a world map, scenes from the field, drawings of radular and anatomical studies illustrated this paper.)

(Abstract)

A cosmopolitan group of snails of varied ecology, particularly diverse and abundant in Europe and eastern North America, the Lymnaeidae have received attention from many workers. Despite this, the systematics of the family remains in a highly debatable state. The systems proposed have been supported by meagre and very inconclusive data. This deficiency is largely inherent in the animals; the shell presents a few characters of questionable dependability, while anatomically little diversity has been demonstrated within the family. However, the need for thorough and critical studies has remained, as lymnaeid comparative anatomy has not seemed to be adequately explored.

The chief subject of this research was the morphology of a Michigan population of *Lymnaea emarginata serrata,* studied by means of dissection. Certain features were subsequently checked against published descriptions and available material of other Lymnaeid species. Numerous scale drawings were prepared, attempting to show the form, proportions and topographical relationships with precision; variation and ontogenetic changes were also taken into account.

As was expected, the anatomy of *L. e. serrata* agrees in many ways, and often in fine detail, with that described for other lymnaeids. Among features accounted for, and not adequately known among other forms, are: the arrangement of the major blood channels of the pallial and pulmonary regions and certain valves involved; anastomoses in the nervous system, especially that between the left and right pallial nerves; and the unilateral branching of the major liver ducts. Certain differences with published descriptions, on examination of the species, were found to be due to omissions or errors of the authors. This is as true regarding the existing longitudinal riblets in the intestine, and a median horizontal muscle band in the buccal cartilage.

In the female genitalia of *L. e. serrata,* three of these are closely connected diverticula, the largest being part of the "convoluted uterus" of authors. The latter may be visualized as a large flat discoidal pouch with its attachment to the uterus along one edge, around which it has become completely folded. The smallest pouch, the pocket, does not communicate with the albumen gland duct, while the third pouch does. The fourth pouch is prominently interposed in the system much further distally. Among notable features of the male genitalia is the bilateral symmetry of the penis, indicated by the arrangement of the muscle layers, lacunae, and a swelling on one side. All the organs of the genitalia become clearly discernable when the shell is between seven and nine mm in length, the distal male complex preceding the rest in development. There is subsequently considerable individual variation in their proportions. The radula shows changes in tooth counts with increase in size, but the bicuspidity of the

laterals is constant and is established by the time the shell reaches about 4 mm in length. The shells of the *L. e. serrata* frequently exceed 24 mm in length, are quite variable in form, and although predominantly brown-pigmented, totally white ones occur.

This investigation has demonstrated more complexities in the genital system than has been shown for lymnaeids generally and it indicates that a new interpretation of the structure and function of particular organs is necessary. Particular genital structures studied have been found to be variously developed or absent in other species, indicating a meaningful taxonomic pattern, in which the female parts are significant. A need for a re-evaluation of comparative characters rejected by some systematists is evident. Studies along these lines are being continued; at present it can be said that the new data tends to support the generic groupings of F. C. Baker and others.

Discussion—Berry: "Shall we follow Hubendick, or shall we break the Lymnaeidae into genera?" Walter: "A definite answer would be premature, but it seems that generic groupings would be justified." Morrison: "You did say that bicuspid laterals occur in young *emarginata;* have you checked Baker's other species in regard to this?" Walter: "I have only checked the one *serrata* population, in which the bicuspid condition was practically traced back to the egg. My few observations on radulae of other species concur with Baker's reports, indicating that the condition is not merely dependent on the size of the snail."

* * * *

Following dinner, another exodus to "Club 600" for the scheduled showing of kodachrome slides supplied by members.

Preceding the slides was a color movie which recorded a trip along the Gulf coast of Mexico to collect birds, reptiles, small mammals, amphibians and, of course, mollusks together with other marine invertebrates. Dr. Thomas E. Pulley, Director of the Natural History Museum of Houston, Texas, who had made the trip with members of his staff, supplied the narration. From beaches of volcanic sand to the tops of the volcanoes themselves the scenes were interesting and beautiful (albeit they portrayed much hard work!) and Dr. Pulley's audience greatly enjoyed sharing it with him in retrospect.

The kodachrome slides recalled former meetings and absent friends: the Yale meeting and the Renaissance architecture around the old, old campus; action shots of the speakers at the same Yale meeting; exhibits and visitors at the 1958 St. Petersburg shell show; scenes of the 1954 meeting which recalled early morning collecting and lobster-on-the-rocks at Nubble Light; pictures of the delegates to the 1957 and 1958 meetings of the Pacific Division; finally, interesting slides of the realistic plastic models of living mollusks which are made by the gifted Californian, Mr. Helmut Meir.

These pictures of earlier meetings, shells in color, malacologists, or subjects which interest malacologists are always welcome. The annual showings are becoming another AMU tradition and a popular one.

* * * *

Thursday morning's session opened with the annual business meeting. Since the minutes of the previous business meeting were printed in the 1957 report bulletin they were not read.

Report of the Secretary-Treasurer for 1957-58

On June 1, 1957 the credit balance in the treasury was $1,374.91; receipts during the subsequent 12 months, $1,260.27, expenditures for the same period, $1,140.31; a June 1, 1958 credit balance of $1,494.87. (An itemized report of both offices is furnished each member of the Executive Council at the close of each fiscal year.)

Over the 12 month period 88 persons had applied and been accepted for membership. 9 had died, 12 resigned and 42 dropped for delinquent dues—a June 1, 1958 membership of 616.

The net profit on the original printing of 1200 copies of HOW TO COLLECT SHELLS was $475.57. A second printing of 550 copies is now ready and being sold. Before this printing is exhausted the publication will be completely revised, authors (when possible) contacted and asked to bring their material up to date, new articles added, etc.

1959 Executive Council Action

At the September 2, 1958 meeting of the Executive Council it was decided to accept the invitation of the Philadelphia Shell Club to hold the 1959 meeting in Philadelphia.

By direction of the Executive Council a resolution is to be drafted which will express to the daughters of the late Henry A. Pilsbry the appreciation of the American Malacological Union for his invaluable services to the broad field of malacology and in particular to the AMU from the time of its inception.

By action of the Council, Honorary Life Memberships were bestowed upon Doctors Horace B. Baker and Joseph C. Bequaert.

Dr. Charlotte Dawley was appointed for the second year to represent the AMU as a delegate to the American Association for the Advancement of Science.

The Council had given unanimous approval to the slate of nominated officers presented by the nominating committee.

(The above reports of the Secretary-Treasurer and the various actions of the Executive Council were approved by vote of the members present.)

Nomination and Election of New Officers

Dr. Henry van der Schalie, chairman of the nominating committee, presented the following slate of officers for 1958-59:

> President, R. Tucker Abbott; Vice-President, Katherine Van Winkle Palmer; 2nd Vice-President, John E. Fitch; Secretary-Treasurer, Margaret C. Teskey; Publications Editor, George M. Moore; Councillors-at-large, John Q. Burch, Ruth E. Craine, Leslie Hubricht, Thomas E. Pulley.

The motion was made and carried that the secretary be instructed to cast a unanimous ballot for the election of the new panel of officers as presented.

President LaRocque introduced the delegates from the Pacific Division of the AMU, Mr. and Mrs. Crawford N. Cate. Mr. Cate reported that the 1958 meeting in Santa Barbara had been most successful, but that both he and Mrs. Cate were of the opinion that a two-day meeting is too short. "This four-day schedule gives everyone time to circulate and get acquainted." He relayed the greetings of outgoing Chairman Albert R. Mead and reported that a new set of By-Laws had been drafted and adopted by the AMUPD which is much like the Constitution of the parent organization. The 1958-59 Pacific Division officers: Chairman, John E. Fitch; Vice-Chairman, Rudolf Stohler; Secretary, Faye Howard; Treasurer, Eva Maye Fletcher.

A list of those lost by death since the last meeting was read and all present were asked to stand for one minute as a tribute to their memory.

Dr. Joseph P. E. Morrison on behalf of the American Malacological Union, voiced heartfelt gratitude to those who had contributed to the success of the meeting. He mentioned especially the local committee consisting mainly of Dr. van der Schalie and his "boys", the University of Michigan whose hospitality all had so greatly enjoyed, and Dr. LaRocque's Department of Geology of Ohio State University who had furnished the attractive printed programs.

Seventeen shell clubs are affiliated members of the American Malacological Union. As the roll was called, a representative of each club with one or more members present rose and spoke briefly of the year's activity of the club. Speaking for their local organization: William J. Clench, Boston Malacological Club. Margaret C. Teskey, Conchological Section, Buffalo Society of Natural Sciences. Percy A. Morris, Connecticut Shell Club. Thomas E. Pulley, Costal Bend Shell Club. Crawford N. Cate, Hawaiian Shell Club. William K. Emerson, New York Shell Club. Crawford N. Cate, Pacific Shell Club. Mrs. H. B. Baker, Philadelphia Shell Club. Mrs. Charles S. Lewis, Greater St. Louis Shell Club. Alger Blaine and Mrs. Lulu B. Siekman, St. Petersburg Shell Club. Dwight W. Taylor, Conchological Club of Southern California. Harry M. Smith, Malacological Society of (Melbourne) Australia.

* * * *

THE EGG-LAYING HABITS OF *POMATIOPSIS LAPIDARIA* AND *P. CINCINNATIENSIS;* PROBLEMS RELATING TO THE CULTURE OF SCHISTOSOME INTERMEDIATE HOSTS by Henry Van der Schalie and Dee Dundee, University of Michigan Museums. Read by Van der Schalie.

(Abstract)

The eggs of *Pomatiopsis,* like those of *Oncomelania* (the intermediate host of the Oriental Blood Fluke, *Schistosoma japonicum),* are difficult to find in nature. In an intensive sampling program during the 1957-1958 period some 22 transects, which included 869 samples, were taken from a typical habitat in the Ann Arbor region. The information gathered indicated that *P. lapidaria* began depositing eggs in mid-March and those recovered reached a peak in mid-June; following a decline in the number there was again a high rate of egg-laying toward the end of July. The season ended about mid-September. The sites in which eggs were found were plotted. Egg-laying appeared to be in random distribution and there were not the clear cut zones previously found in a similar study of *Pomatiopsis cincinnatiensis* (Lea). Since egg-laying in both *Oncomelania* and *Pomatiopsis* is usually highly seasonal in nature so that it is difficult to get eggs and young in the laboratory during the winter season, an attempt was made to stimulate ovulation. Because of the small size of the *Pomatiopsis,*

a locally introduced large land snail, *Helix pomatia* L., was used. Reports in the literature indicate that hormones or activators may be present in the nervous system of mollusks. Macerated nervous tissues and extracts from the same and other large land snails were injected into the body cavity of *H. pomatia.* These tests gave no positive results. Ovulation was also attempted with *Pomatiopsis lapidaria* by using rat DNA but it was discovered that the snails would not ingest the DNA with their food. Hence this work was also inconclusive. Although it was impossible to stimulate egg-laying in the off-season, these studies did give information regarding both the number and place of egg-laying, as well as the incubation time, in nature, and it was found that only half of the eggs taken from the field hatched in the laboratory.

Discussion—Berry: "Have you infected *Pomatiopsis lapidaria* with the Japanese strain of *Schistosoma japonica?*" Van der Schalie: "We know that *P. lapidaria* has taken the Chinese strain; we have not been able to get the Japanese strain into it. We do have a long list of projects and hope to do more infectivity work so as to know better which strains are refrective." Baker: "May I hope that when you do try you won't be too successful!" Morrison: "Since you say you get only 50% to hatch in the laboratory, does that mean that you kill half in screening?" Van der Schalie: "Yes; they're hard to handle. A trained eye is necessary. Also conditions in the hatching chamber must be exactly right. Our losses are probably due to fungus in the vivaria and generally unfavorable conditions. There are many problems and we may be spreading ourselves too thin." Baker: "What water do you use in your tanks?" Van der Schalie: "Natural water from the outlet of Portage Lake into the Huron River. We can't use the local city water, it is highly chlorinated, softened, and contains calcium fluoride. We also ran tests using city water and the natural water but we find that the river water is best for growth and development of snails for our purposes."

* * * *

Time had been allowed before the noontime meal for a visit to Dr. Van der Schalie's department of the University Museums. To the wonder of all who emerged from the South Quad for the first time in two days the sun shone, the grass was green and people went about their business quite as usual. It was an easy walk to the museum and an instructive hour was spent in viewing at close range the detailed laboratory work of Dr. Van and his trio of graduate students: Paul Basch, John Burch and Harry Walters. Another, Dee Dundee, had been unable to wait for the meeting and had left a few days earlier for her new home and her work at Tulane University.

* * * *

Thursday afternoon began with Open Forum, and any person with a question, an observation or a suggestion was invited to "speak up."

Margaret Teskey produced two specimens of the heretofore rare *Ventridens intertextus eutropis* Pilsbry which she had collected in Tennessee two days before the meeting. Discovered between Nashville and Clarksville in 1954, the colony is visited by Mrs. Teskey at every opportunity.

Leslie Hubricht: "I have taken this species at two Tennessee stations besides this one. I have not been able to locate it at the type locality—which, by the way, is in error, since Cherry Valley is west of Watertown and not east as Pilsbry said when he described it. I'm convinced that this is a valid species; the range of *eutropis* and *intertextus* do not overlap."

Mr. Harry M. Smith explained further about the Malacological Society of Australia, after it was established by a show of hands that four persons present were members of that far-away group. The dues are nominal, said he, and the quarterly newsletter published and sent to all members is most interesting. The club secretary Mrs. Thelma Hartley is, or was, an American, having been born in Georgia.

Dr. Ruth Turner had reached the meetings a day late, coming directly to Ann Arbor from her summer-long visit to Great Britain where she had spent most of her time at the British Museum (Natural History) working on the Teredinidae and *Papuina*. She attended the Colloquim on Zoological Nomenclature and the 15th International Congress of Zoology. She reported on some of the more important decisions of the Colloquim concerning the new Rules of Zoological Nomenclature mentioning that the law of priority will not apply to categories above the family level, that microcards and microfilm are not recognized as publication and that it was recommended that mimeographing not be used. She also reported that the Law of Conservation was eliminated by the Colloquim but that it was replaced by a Status of Limitations at the meeting of the Section on Zoological Nomenclature of the Congress. This restores the principle to suppress names that have not been in use for fifty years.

She mentioned particularly the session of the Congress devoted to *Neopilina* and the Malacologists dinner at which some twenty malacologists from various countries had an opportunity to get acquainted. She also described briefly her visit to several marine laboratories in England, Wales and Scotland.

Discussion—Morris: "Who has charge of the shell collection at the British Museum (Natural History), Gailbraith?" Turner: "Yes, Mr. Ion Gailbraith is head of the Section but Mr. Peter Dance is perhaps the most active member of the department."

Van der Schalie: "Did you meet Professor Alistair Graham?" Turner: "Yes, he gave a most interesting paper at the Congress and later I spent a very pleasant day at Reading University and saw the work which Prof. Graham, Dr. Fretter and Dr. Quick are doing. Prof. Graham's book on Prosobranch Gastropods is well along. The many anatomical drawings that are being made for it are really superb."

Taylor: "Did you meet the Russian who works on freshwater mollusks?" Turner: "No, he wasn't there, but I did meet Dr. Filatova who works on deep sea mollusks, and Professor Zenkavitch, the author of the book on Oceanography of the Seas of the U.S.S.R."

REMARKS ON *CARYCHIUM STYGIUM CALL* by Leslie Hubricht, Louisville, Kentucky.

(Abstract)

***Carychium stygium* Call is rather widely distributed in the caves of central Kentucky, being found in an area about 60 miles long by about 30 miles wide, ranging from near Upton, Kentucky to near Portland, Tennessee. Their food is principally cave cricket guano, although they will eat leaves, wood, and other debris where it is available. The shells are**

remarkably uniform, there being practically no variation between the different cave populations. How this snail which crawls so slowly could become distributed in these caves through subterranean passages is a problem. It is more probable that it was originally a surface species which entered the various caves and then died out on the surface.

Discussion—Clarke: "What species are found outside of caves in that area?" Hubricht: "*Carychium nannodes, C. costatum,* and *C. exile. C. exiguum* which is probably most closely related to *C. stygium* has not been found in Kentucky south of the floodplain of the Ohio river." Haas: "Can't the distribution be explained by subterranean river systems?" Hubricht: "I can't accept such a theory because the subterranean streams are all small and drain small areas." Clench: "Then maybe in a breakdown of cave systems over the years?" Hubricht: "Maybe, but that wouldn't hold true for beetles or other animals." Haas: "What is the relationship of beetles from one cave to another?" Hubricht: "There are four or five species, none of which are found over the entire range of the snails. So most of these caves must be isolated." Burch: "Did you find other species of *Carychium* in caves?" Hubricht: "Yes, occasionally *C. exile,* but only where leaves had washed into the caves." Burch: "How does the eye pigment compare with that of other species living outside of caves?" Hubricht: "Outside species have the eye pigmentation in a complete sphere but in *stygium* the pigmentation is often an irregular mass rather than a sphere." Van der Schalie: "This is most interesting; won't you send us some specimens of these ectotypes for serial section?" Hubricht: "There is also a difference in the tentacles in *stygium.* They may be either pointed or rounded lobed. These two forms are found together in caves." McGee: "I still can't see how you can rule out bats as a means of dispersal. The snails may not go to the ceiling but bats on occasion fall or crawl to the floor of the cave." Clarke: "And how about eggs; could they have been spread by water in subterranean passages, maybe washed in where the snail itself couldn't pass?" Hubricht: "Maybe. The whole thing is an interesting problem."

REMARKS ON SPHAERIIDAE by H. B. Herrington, Westbrook, Ontario, Canada.

(Abstract)

I have been attempting to revise the taxonomy of the Sphaeriidae. 110 species of *Pisidium* and 64 species of *Sphaerium* have been described from North America; I have reduced these to 24 species of *Pisidium* and 12 of *Sphaerium.* A third genera, *Byssanodonta,* lives in hot climates only. The much used name *Musculium* is a name given to one of the five groups that make up the genus *Sphaerium;* in my MS I set forth reasons why it should not be given the status of a genus.

Some species are limited in geographical range by climatic conditions, some are circumpolar and others found over a large part of the world. These little clams are food for waterfowl and for bottom feeding fish.

Much work remains to be done, a study of the soft parts is needed as well as of propogation and distribution.

Discussion—Morrison: "There is a very real need for the study of the soft parts of the Sphaeriidae. On the basis of life history observations, I personally believe that *Musculium* (bearing up to 20 always uniform size young the size of the capped beaks) is a genus biologically distinct from *Sphaerium* (with usually only two to four extremely large young of different sizes at one time in the gills). Another point I want to raise is the wrong usage of the name *Byssanodonta* instead of *Eupera*. Orbigny described a shell from the Rio Plata, with no teeth on the hinge, and with a byssus. His figured shell looks like the genus *Musculus* of the Family Mytilidae. The genus *Eupera* always has distinct teeth on the hinge, and I have never seen a Sphaeriid of any kind with a byssus." Haas: "Oh yes, many European and African species have a byssus when young." Morrison: "Maybe that is true, but I never saw it in more than thirty-five years of collecting American species." Herrington: "Have you ever examined *Sphaerium rhomboideum?* They are collected frequently with capped beaks, and from all sorts of habitats." Morrison: "Yes, I've seen them in Wisconsin, and as far as I know they bear large young of unequal size like the other *Sphaerium* species." Clench: "On the subject of distribution, in *Dispersal of Shells* there's a picture of a dytiscid water beetle with a *Sphaerium* clamped on one foot. Think how often it must have happened unobserved!" Haas: "Salamanders are a dispersal factor, too. In ponds on the Pribiloff Islands which are three miles from shore, there are *Pisidium;* sea birds may have brought them there." Berg: "In the case of *Sphaerium* in lakes where there are no plants to produce oxygen, can they get along without oxygen?" Morrison: "For a long time, yes. I twice dredged the large *Pisidium idahoense* Roper from 'oxygen-consuming' black mud in the 87-foot hole at the bottom of Lake Mendota. It and an undescribed species that is more abundant were both living and surviving there. Dr. Birge and Prof. Juday and their student limnologists had found out years before that there is no available oxygen in this habitat for about three months of each summer season."

A PLEUROCERID INDEX TO PAST COLLECTING IN THE OHIO AND TENNESSEE RIVER BASINS WITH SOME THOUGHTS FOR THE FUTURE by Joseph Rosewater, Museum of Comparative Zoology, Harvard University.

(This paper was illustrated by kodachromes of representative specimens from the area under consideration and maps depicting past collecting localities.)

(Abstract)

This study has a threefold purpose: (1) to outline the distribution of the *Pleurocera canaliculatum* (Say) group of Goodrich (1940); (2) to determine how well past locality records cover the area considered; and (3) to suggest that this survey may serve as an index to the efficiency of past collecting of other mollusks in the Ohio and Tennessee River basins.

This is perhaps the richest region in the world for freshwater mollusks. It has, with the possible exception of the Coosa-Alabama system, the greatest abundance of the family Pleuroceridae. Though the Coosa-Alabama and the Ohio-Tennessee drainages were probably connected during the geologic past much endemicity has developed. For example, the genus *Apella* is found only in the Coosa system while *Io* is present only in the head waters and upper reaches of the Tennessee River. Certain members of the genus *Pleurocera,* however, show resemblance in the two systems.

Early collecting records are notoriously inaccurate or general, probably because good maps and locality data were unavailable or simply because these items seemed unimportant in the light of science at that time. Recent workers have tended to collect large series and to pin-point localities, thus making more thorough studies of river systems possible.

The *Pleurocera canaliculatum* group, with few exceptions, is limited to the larger rivers and streams of the Ohio and Tennessee River basins. When upper reaches of these rivers are investigated variations become apparent and it is often difficult to recognize distinct *"canaliculatum"* features.

When major locality records from the Museum of Comparative Zoology for the *canaliculatum* group are plotted on a map of the river basins the indication is that the area has been collected fairly thoroughly. Noticeable gaps in the northeastern portion of the range occur in: the Ohio River above the mouth of the Scioto R. (see S. T. Brooks, 1931); the Salt, Kentucky, Licking and Miami Rivers. These gaps may reflect lack of collecting and not necessarily the absence of the group from these areas.

Taxonomy of the pleurocerids has undergone simplification from the time of G. W. Tryon through the work of Calvin Goodrich. The shell and operculum were used most often by early workers as criteria for separating species. Studies of soft anatomy by Morrison (1951, 1954) have produced interesting results and more work is needed in this direction.

For the future study of variation in this group several suggestions may be made. (1) Gaps in the field collecting record should be filled in. Local workers can perform a great service by collecting new and unworked localities to help fill in these gaps. (2) Distinctive forms can be transplanted from one locality to another. In such transactions careful records must be kept and further developments watched closely. Things to be looked for are: possible hybridization between introduced forms and allied populations; changes in growth form if certain variations are environmentally induced. (3) New techniques such as chromosome examinations, paper chromatography and serology have not been widely used as yet but offer great promise as future tools for determining relationships.

Discussion—Van der Schalie: "This is welcome work with a most interesting group. Nothing has been done since Goodrich's time. We haven't tried transplanting; it's very difficult with freshwater shells." Basch: "In filling in locality records, how can you be sure of giving adequate information? How do you know that things haven't changed beyond recognition since 1850?" Rosewater: "We don't expect to find things exactly as they were; some species which were there then may have since been displaced as the result of dam building and other such improvements." Clench: "Spot checks of the area show not too much change since last century." Morrison: "The ecology of Mussels Shoals moved only ten miles in 10,000 years!" Clench: "Shells used by the Indians as jewelry and implements have been found buried deep in debris in caves in Alabama; though probably several thousands of years old they appear to be the same species as we find living in the rivers today." Baker: "We are dealing with the oldest geological system in the world." Morrison: "And Ortmann insisted that the fauna evolved with the system."

RESULTS OF THE PURITAN-AMERICAN MUSEUM EXPEDITION TO WESTERN MEXICO by William K. Emerson, American Museum of Natural History.

(This paper accompanied by kodachromes of the dredging boat in action, a map of the area covered and some of the shells collected.)

(Abstract)

The schooner "Puritan" left Newport, California on March 5, 1957 and returned three months later after logging 4,032 miles with stops along the west coast of Baja California, the Tres Marías Islands, and the Gulf of California. The primary objectives of the expedition were to study the effects of insular isolation on populations of mammals, reptiles, and amphibians and to compare the present and past distributions of the littoral marine invertebrate faunas, particularly the mollusks, stony corals, and bryozoans.

More than 50 collecting localities were visited, with the result that 183 marine stations, 31 fossil invertebrate stations, and 81 sediment stations were established. In addition, more than 450 Recent mammal specimens and over 400 herpetological specimens were taken. The scientific results of the expedition are being published in the "American Museum Novitates" and the "Bulletin of the American Museum of Natural History."

THE PRIMITIVE LIFE HISTORY OF SOME SALT MARSH SNAILS by Joseph P. E. Morrison, U. S. National Museum.

(Illustrated with slides portraying the salt marsh habitats, egg masses, and photo-micrographs of the newly-hatched veliger larval shells.)

(Abstract)

The Melampidae or Salt Marsh Snails are probably the most primitive of all the living Pulmonate Land Snail groups. The life history of some of them includes the pelagic swimming veliger larval stage which is probably fundamental for all Mollusks. Two species from the Atlantic coast of the United States, *Detracia floridana* Pfeiffer and *Melampus (Micromelampus) bidentatus* Say, and the closely related *Melampus (Micromelampus) olivaceus* Carpenter from California, have all three retained this most primitive type of life history.

These "sea-shore" land snails lay a great number of minute eggs in a clear jelly mass on the substratum, on plants, or on drift wood on the intertidal zone. By the time the eggs hatch in about two weeks, the jelly has dissipated so that the veliger larvae swim out of the egg capsule directly into the brackish or salt water. After a pelagic period of growth in which the shell is approximately doubled in size, the larval snails are ready to start adult life on shore. Apparently by means of an oil from the egg-yolk or from the pelagic food materials, the young may stay on and are carried ashore on the surface film, by wind or water currents.

How many years the Salt Marsh Snails live in the intertidal zone on shore is still little known. An observed lifespan of two years is probable in the case of *Detracia floridana* Pfeiffer. The life history span of any *Melampus* or *Micromelampus* species is still unknown.

Observations on the time of the egg-laying season of *Melampus (Micromelampus) bidentatus* Say have indicated a very unusual life history problem. Holle and Duneen (Nautilus 70 (3): 90-95: 1957) have reported "Egg masses—in all salt marshes June 20." north of Cape Cod. My observations during the past five years show it to be approximately July 20 from Rhode Island to Chesapeake Bay, inclusive. In 1957 it was found to be just after August 20 in the vicinity of Cape Hatteras, North Carolina. Such indications of a progressively later egg-laying season in the warmer waters to the southward, in apparent anticipation of the winter season, present us with zoogeographic requirements for the complete study of the life history of species of the Melampidae.

Discussion—Clench: "Do these species of the (Ellobiidae) Melampidae have veliger lobes?" Morrison: "Yes, that is apparent, though to date we have not proven it by photograph or display. These are definitely swimming larvae of the veliger type."

BRACKISH WATER GENERA OF MACTRIDAE by Joseph P. E. Morrison, U. S. National Museum.

(Abstract)

RANGIA: Hinge with long serrated anterior and posterior laterals extending dorsally over both anterior and posterior adductor muscle scars. Pallial sinus distinct, narrow, deep. Adult shells from 40 to 80 mm. long.

RANGIANELLA: Hinge with short smooth anterior and posterior laterals just about reaching anterior and posterior adductor muscle scars. Pallial sinus not too evident, wide, shallow. Adult shells from 25 to 43 mm. long.

MULINIA: Hinge with short smooth anterior and posterior laterals not reaching adductor muscle scars. Pallial sinus distinct, long, extending one-third or more of ventral distance between the adductor muscle scars. Shell with more epidermis evident, and a sharper posterior ridge. Adult shells up to 22 mm. long only.

Developed primarily for the species *Rangia cuneata* Gray, *Rangianella flexuosa* Conrad, and *Mulinia lateralis* Say, all from the Atlantic coast of the United States, it was hoped that this outline (except for adult shell size) would be helpful in other zoogeographic areas also.

(Dr. Morrison supplied his listeners with mimeographed sheets which contained sketches and brief descriptions of the shells in question.)

With this paper the scientific portion of the meeting came to an end. The university had thoughtfully arranged for a tour of the campus. Visitors were transported in two buses along the several miles of roads which wind through the vast area occupied by the various schools of the great university, past the library and administration buildings on the older portion of the campus, and into what must have been farm lands quite recently but now a part of the huge system which makes up an institution of learning such as this. In this latter area was the new school of nuclear physics with its stark building, housing one of the country's few nuclear reactors; and a little further along, the several university hospitals. Finally a stop at the mammoth football stadium where on certain Autumn afternoons one hundred and one thousand persons bask or shiver, scream with joy or weep with frustration as the case may be.

It was an enjoyable ride and as Dr. Hubbell had predicted days earlier, the old timers noted many, many changes.

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The Thursday evening feature was the annual dinner, highlighted near its close by the announcement that a birthday was being celebrated. Then all present were served with a portion of the cake which symbolized a most important event: the twenty-first birthday of Michael Paul Eldred Morrison.

Later everyone moved down to Club 600, there to be entertained by an hour-long series of kodachrome slides narrated by Dr. Elmer G. Berry. Entitled LANDS OF THE "SCHISTO" SNAIL, it was the story of the Berry's trips as they traveled throughout Africa and Egypt in connection with Dr. Berry's research work and his investigation of control measures for the snail-spread plague, *Schistosomiasis.* One forgot the grim purpose of the trip as one beautiful scene followed another on the screen until interspersed pictures of doomed children and the squalor of their living conditions jolted the audience back to reality. Dr. Berry is soon to return to Egypt to continue his work for World Health Organization.

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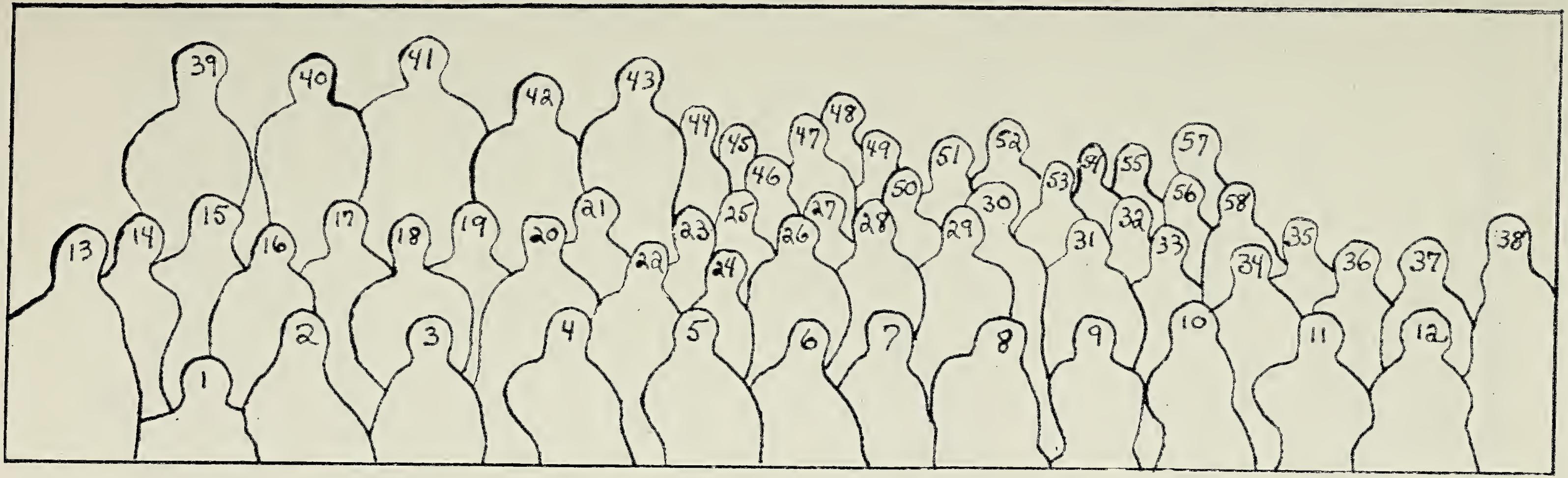
As is usual, a field trip on Friday wound up the meeting. Collectors in a caravan of private cars followed Dr. Van der Schalie to the Edwin S. George Reserve, a biological field station maintained by the University of Michigan.

The eighteen mile trip was punctuated by two stops, one at a wooded site especially rich in land species, and another at a wayside park bordered by the Huron River and bisected by a small brook. This combination provided several species of aquatic gastropods as well as Unionidae.

Arrival of the field party at the reserve coincided with that of Mrs. Van der Schalie, laden with box lunches from the South Quadrangle kitchen and supplemented by tomatoes and cucumbers from the Van der Schalie garden. One hour and gallons of coffee later, surfeited collectors began to drift away. Most said their goodbyes for another year, a few spent the afternoon collecting *unios* from nearby lakes and the evening in cleaning their specimens. Saturday morning they, too, departed and a most valuable and enjoyable 24th annual meeting was over.

MARGARET C. TESKEY, *Secretary*
American Malacological Union



1. Crawford N. Cate, 2. Estelle L. Windhorst, 3. Ruth D. Turner, 4. Margaret C. Teskey, 5. Mrs. Alger P. Blaine, 6. Mrs. Elmer G. Berry, 7. Mrs. Joseph P. E. Morrison, 8. Mrs. Horace B. Baker, 9. Mrs. Henry van der Schalie, 10. Mrs. H. B. Herrington, 11. Michael Morrison, 12. Mrs. Margaret Teare, 13. Mrs. Eliot Armstrong, 14. Elmer G. Berry, 15. Horace B. Baker, 16. Henry van der Schalie, 17. Joseph P. E. Morrison, 18. Paul F. Basch, 19. Fritz Haas, 20. David H. Stansbury, 21. Thomas E. Pulley, 22. Juan Jose Parodiz, 23. Harvey G. Meyer, 24. Mrs. J. J. Parodiz, 25. Mrs. Crawford N. Cate, 26. William J. Clench, 27. Mrs. Joseph Rosewater, 28. William K. Emerson, 29. Aurèle LaRocque, 30. Harriet W. Thomson, 31. H. B. Herrington, 32. Alger P. Blaine, 33. Harry M. Smith, 34. Mrs. Harry M. Smith, 35. Percy A. Morris, 36. Adlai B. Wheel, 37. Mrs. Adlai B. Wheel, 38. John B. Burch, 39. Paul L. McGee, 40. Clifford O. Berg, 41. Leslie Hubricht, 42. Ralph W. Dexter, 43. Dwight W. Taylor, 44. Edward J. Karlin, 45. Mrs. Edward J. Karlin, 46. Mrs. Arthur H. Clarke, Jr., 47. Arthur H. Clarke, Jr., 48. Don Meyer, 49. Mrs. Harvey G. Meyer, 50. Joseph Rosewater, 51. Bernice Leland, 52. G. Alan Solem, 53. George E. Dunn, 54. Mrs. George E. Dunn, 55. Mrs. Charles S. Lewis, 56. Lulu B. Siekman, 57. Roger V. Dunn, 58. Ruth A. Craine.

ATTENDING THE 1958 AMU MEETING

Mrs. Eliot Armstrong, Buffalo, New York
Dr. and Mrs. H. B. Baker, Havertown, Pennsylvania
Dr. Paul F. Basch, Ann Arbor, Michigan
Dr. Clifford O. Berg, Ithaca, New York
Dr. and Mrs. Elmer G. Berry, Bethesda, Maryland
Mr. and Mrs. Alger P. Blaine, Springfield, Massachusetts
John B. Burch, Ann Arbor, Michigan
Mr. and Mrs. Crawford N. Cate, Los Angeles, California
Mr. and Mrs. Arthur H. Clarke, Jr., Ithaca, New York
Dr. and Mrs. William J. Clench, Boston, Massachusetts
Mrs. Ruth E. Craine, Norwich, New York
Dr. Ralph W. Dexter, Kent, Ohio
V. Roger Dunn, Gulfport, Florida
Mr. and Mrs. George E. Dunn, St. Petersburg, Florida
Dr. William K. Emerson, New York City
Dr. Fritz Haas, Chicago
William H. Heard, Ann Arbor, Michigan
Rev. and Mrs. H. B. Herrington, Westbrook, Ontario, Canada
Leslie Hubricht, Louisville, Kentucky
Dr. and Mrs. Edward J. Karlin, Bowling Green, Ohio
Dr. and Mrs. Aurele LaRocque, Columbus, Ohio
Miss Bernice Leland, Eugene, Oregon
Mrs. Francis S. Lewis, Webster Groves, Missouri
Dr. and Mrs. Paul L. McGee, Houston, Texas
Mrs. Robert MacLeod, Ottawa, Ontario, Canada
Percy A. Morris, New Haven, Connecticut
Dr. and Mrs. J. P. E. Morrison, Falls Church, Virginia
Michael Morrison, Falls Church, Virginia
Mr. and Mrs. Harvey G. Meyer, Fountain City, Tennessee
Donal G. Myer, Columbus, Ohio
Dr. and Mrs. Juan J. Parodiz, Pittsburgh, Pennsylvania
Dr. Thomas E. Pulley, Houston, Texas
Mr. and Mrs. Joseph Rosewater, Cambridge, Massachusetts
Dr. Loris S. Russell, Ottawa, Ontario, Canada
Dr. and Mrs. Henry van der Schalie, Ann Arbor, Michigan
Mrs. Lulu B. Siekman, St. Petersburg, Florida
Mr. and Mrs. Harry M. Smith, Sandusky, Ohio
Dr. S. Alan Solem, Oak Park, Illinois
David H. Stansbery, Columbus, Ohio
Dr. Dwight W. Taylor, Washington, D. C.
Mrs. Margaret M. Teare, Buffalo, New York
Mrs. Margaret C. Teskey, Marinette, Wisconsin
Miss Harriet W. Thomson, Eugene, Oregon
Dr. Ruth D. Turner, Cambridge, Massachusetts
Harold J. Walter, Ann Arbor, Michigan
Mr. and Mrs. Adlai B. Wheel, Syracuse, New York
Miss Estell L. Windhorst, Webster Groves, Missouri
James A. Zimmerman, Columbus, Ohio

AMERICAN MALACOLOGICAL UNION — PACIFIC DIVISION
ELEVENTH ANNUAL MEETING
JUNE 27-29, 1958
Life Sciences Building, University of California
Berkeley, California

The 11th Annual Meeting of the Pacific Division was conducted under the able direction of the Chairman, Dr. Albert R. Mead, head of the Department of Zoology, University of Arizona. A total of 87 registered. Sponsoring groups were the Northern California Malacozoological Club and the Sacramento Valley Conchological Society, whose untiring efforts and committee work resulted in an interesting and successful meeting.

Program Chairman this year was Merton E. Hinshaw. Chairman of Arrangements was ably handled by Mrs. Lucille Zellers. Other committee personnel included: **Registration**—Marianna Paulson, Chmn., Muirid Herring and Lucille Zellers; **Publicity and Displays**—Helen Hunt, Chmn., Henrietta, Kris and Joe Rosman, Hazel Jeschien, Marianna Paulson, Gladys Archerd; **Field Trips**—Helen Burton, Chmn., Ned Allison, Lauren McCoy; **Banquet and Decorations**—Hazel Jeschien, Chmn., Rule Bancroft, Thena Lindquist, Helen Hunt, Henrietta Rosman, Gladys Archerd, Mary Handley; **Reception** (from NCMC)—Gladys Archerd, Chmn., Thena Lindquist, Helen Burton, Henrietta and Joe Rosman, Evelyn Wilson, Marianna Paulson—(from Sacramento Society)—Mary Long, Florence LaFayette, Bessie Hams, Elsie Hutson.

On the evening before the meeting the NCMC held open-house in one of the special rooms in the Shattuck Hotel in Berkeley where members gathered to renew old acquaintances or make new ones, and partake of excellent refreshments. All of the AMU members who were in town early attended and a real old-fashioned shell gab-fest resulted, setting an excellent stage for the formal meeting to follow.

Dr. Mead called the 11th Annual Meeting of the Pacific Division to order in Room 2005, Life Sciences Building on the University campus at 11:15 A.M. Due to the regrettable absence of Miss Ruth E. Coats, Secretary-Treasurer, Mrs. John Q. Burch was appointed secretary *pro tem.*

In the absence of Dr. Cadet Hand, Dr. Morgan Harris, chairman of the Zoology Department of the University of California extended a cordial welcome to the AMU members and wished them an enjoyable meeting.

Announcements were made giving time and place of the group photograph, the Saturday evening banquet, and the field trips, one to a nearby fossil locality and the other to view the mollusk collection in the University's Department of Paleontology on the campus, which originated with the old "State Collection", one of the earliest to be started in California. Attention of the members was called to several fine exhibits of shells in down-town

Berkeley store windows, including the Public Library, arranged by Chairman Helen Hunt and her Publicity and Displays Committee. (Incidentally, these received much favorable comment outside of AMU circles as well as inside, and were described in an illustrated feature article in the local newspaper under the caption "The Elite of Beachcombers in Town this Week").

Chairman Mead opened the meeting with a tribute to the malacological work of the late Dr. Henry A. Pilsbry and spoke of his association and of the encouragement given him by Dr. Pilsbry. Dr. Leo G. Hertlein of the California Academy of Sciences spoke of Dr. Pilsbry's contribution to Pacific Coast conchology. The true test of ability, he said, is to be able to follow in the footsteps of another great man. Pilsbry, he pointed out, was only 25 years old when Tryon died, and yet he completed the first series of volumes of the Manual of Conchology, with some assistance from others, including Vanatta and Sharp. He then went on to complete the second series of the Manual covering the land snails, a stupendous work, but perhaps his most monumental contributions during his later years was his monograph of the Land Shells of North America in 4 volumes.

Allyn Smith of the California Academy mentioned Pilsbry's contributions to the land shells and chitons of the Pacific Coast. He stated his great regret that during a long conchological career he had never met Dr. Pilsbry personally although they had carried on a long and fruitful correspondence that terminated only a few days before Dr. Pilsbry's death.

The first technical session for presentation of papers started in the afternoon and continued through most of the following day. Reviews of papers presented follow in another section of this report.

A meeting of the Executive Board was called by Chairman Mead at 1:00 P.M., June 27, with the following members present: John Fitch, Mrs. John Burch, Mrs. Elsie Chace, Allyn Smith, Dr. Myra Keen, Dr. Leo Hertlein. The report of the By-Laws Committee, Dr. Keen, Chmn., was discussed. Dr. Hertlein, Chairman of the Nominating Committee reported on the selection of Pacific Coast Division officers for the coming year.

BUSINESS MEETING

Minutes: A motion was made and carried to dispense with a reading of the minutes of last year's meeting and to accept those published in the AMU report for 1957.

The Committee on By-Laws, consisting of Myra Keen, Chmn., Eva Mae Fletcher and Allyn Smith made its report. Dr. Keen explained the need for a somewhat less informal procedure for conducting the business of the Pacific Division, suggested a minor word change in the previously distributed copies of the proposed new By-Laws, and recommended their adoption. It was moved by Chace and seconded by Burch that the new By-Laws, as amended by Dr. Keen be accepted. This was carried unanimously.

A further motion was made and unanimously carried that in the event the Pacific Division Chairman cannot attend an annual meeting of the national organization, he be instructed to use his discretion in appointing a western member who can attend in order that the Pacific Division be represented officially.

Treasurer's Report

Balance on hand May 30, 1957	$16.03
Registration fees received	47.00
Total cash on hand	$63.03
AMUPD Honorary Membership fee (A. Sorensen)	2.00
Chairman's expenses and programs	8.32
Secretary's expenses	2.10
Photograph	1.50
Total expenses	$13.92
Balance on hand June 2, 1958	$49.11

(Signed) Ruth Coats, Secretary-Treasurer

The Nominating Committee, appointed sometime prior to the annual meeting by Chairman Mead and consisting of Dr. Hertlein, Dr. W. O. Gregg and Allyn Smith made its nominations as follows: Chairman, John E. Fitch; Vice-Chairman, Dr. Rudolf Stohler; Secretary, Faye Howard; Treasurer, Eva Mae Fletcher.

There being no further nominations from the floor, it was moved by John Burch, seconded by Crawford Cate and carried unanimously that the report of the Nominating Committee be accepted and that the Secretary cast a unanimous ballot for the above-named new officers for the coming year.

A motion was made by Allyn Smith, seconded by S. S. Berry and carried unanimously that the secretary be instructed to write an appropriate letter to Dr. Tokubei Kuroda, President of the Malacological Society of Japan, congratulating the Society on its 25th anniversary to be celebrated at an annual meeting in November, and that a copy of this letter be forwarded to the Secretary-Treasurer of the AMU for such parallel action by the national organization as it may wish to take at its annual meeting.

The secretary read or reported on the following communications:

A telegram "Best wishes for a successful meeting. Sorry I could not attend." Signed by Aurele LaRocque, President AMU.

A note from Mrs. Tui Henderson, president of the Hawaiian Malacological Society regretting inability to attend the annual meeting of the Pacific Division.

Through Nelson Baker an open invitation from Dr. Coggeshall, director of the Santa Barbara Museum, was extended to the Pacific Division to use its facilities for a future annual meeting.

Greetings from Mrs. Margaret Teskey, AMU Secretary-Treasurer, and her announcement that Dr. Aurele LaRocque had agreed to edit a revision of the AMU manual "How to Collect Shells." She urged that corrections in the first edition and descriptions of new collecting methods be sent in and would be welcome.

John Strobeen extended greetings from Andrew Sorensen, who was unable to attend. Regret was expressed of the absence of Ray Summers because of illness.

A unanimous vote of thanks was extended to Andy Sorensen, John Strobeen, John Fitch and Mrs. Arnold for the generous donations of shells for distribution to members attending the annual meeting.

Chairman Mead announced he represented the AMU at the 9th Pacific Science Congress held in Bangkok, Thailand, in November-December, 1957, and that Dr. Myra Keen of Stanford planned to attend the International Congress for Zoological Nomenclature to be held in London in July, 1958.

Friday Evening Session—This was devoted to a showing of interesting colored slides by Dr. Mead, taken mainly on Oahu and by Allyn Smith during his recent trip to Japan.

Annual Banquet—This was an enjoyable and a fitting close to the scientific and business sessions held during the day. The main dining room in the Hotel Shattuck was decorated appropriately with infinite pains and vast preliminary preparations by Hazel Jeschien and her clever committee. At the head table, the floral center piece was flanked by growing gardens of succulents in abalone shells.

The individual place cards, printed by Dr. Stohler, were completed by Mr. and Mrs. Rosman each with an example of the European Brown Snail (*Helix aspersa*) furnished by Allyn Smith and collected more than 50 years before in Oakland by the late Professor William J. Raymond. Also at each place was the paired valves of the local little-neck clam (*Protothaca staminea*), lying on its side with the lower half a miniature succulent garden in sand—a truly unique and lovely favor.

Following an excellent dinner the Chairman, Dr. Albert R. Mead gave a travelogue "Oahu and West to Chienmai," profusely accompanied by many kodachrome slides, in which he told of his trip to the Hawaiian Islands and to Thailand to attend the Pacific Science Congress at Bangkok. So well was this done, the members and their guests were able to take the trip by proxy and appreciate Al Mead's experiences, which were all the more enjoyable because of a liberal injection of Meadian (definitely not *medion*) humor!

The banquet was closed with a standing introduction of the new officers of the Pacific Division.

FORMAL SESSIONS

Cleaning Shells with a Vibratool by Dr. Myra Keen.
(Exhibited and demonstrated this very handy tool.)

(Abstract)

The Vibratool is a small, electrically-driven hammer that may be fitted with a chuck to hold steel phonograph needles. The tool is useful for removing most types of incrustation from shells, and with reasonable care may be used on the most fragile and delicate surfaces without injury to the shell.

The Bean Clam, Donax gouldii by John E. Fitch.
(Illustrated with slides and specimens.)

(Abstract)

Facts and figures on the bean clam, *Donax gouldii,* are as follows: They are found on nearly all sandy, exposed beaches from San Luis Obispo County, south. There are sporadic population increases that are astronomical in magnitude. The spawning season normally lasts from May through September. Young clams are usually noted around July. The sexes are separate and depending upon size (age) a single female is capable of spawning 1,000 to 50,000 eggs at a time. They feed upon microscopic invertebrate organisms and detritus. They live for a maximum of 3 years and attain a length of just over 1 inch. Hydroids and pea crabs live commensally on their shells and inside the mantle cavity. They are heavily infested with an intermediate stage of a flatworm trematode parasite and a single-celled protozoon. Fish, birds, crustaceans, and other mollusks prey upon them. As many as 3.7 billion clams weighing 5.5 million pounds inhabited a 5 mile stretch of beach at one time. Pismo clams *(Tivela stultorum)* living in the same habitat suffer as a result of competition for food and injuries received during normal vertical movements. Although they represent a relatively unexploited resource by man at present, this offers unlimited possibilities to some enterprising individual or concern.

Taxonomic Problems in the Conidae by John Q. Burch.
(Illustrated with some 30 species of *Conus* and drawings of their radulae.)

(Abstract)

The author calls attention to the confusion caused by the lack of accord regarding the species of the early authors who depended largely upon references to the puzzling wood cuts of pre-Linnean writers.

The arrangements into subgenera by various authors differ fantastically, and the conclusion is revived that a division of the Conidae based on shell characters alone is impossible because these characters merge into one another.

A division based upon radular characters results in a very different grouping of species.

The final conclusion of the writer is that pertinent studies should include the work done on the radula and other anatomy, the ecology, and the protoconch of the individuals in each species under study.

The Geologic History of Chitons by Allyn G. Smith.
(Illustrated with a large set of beautifully mounted valves of Paleozoic species and Kodachrome slides of various types of fossil species.)

(Abstract)

The chitons (Class *Amphineura,* Subclass *Polyplacophora)* are of extremely great age. Their fossil record goes back to the Upper Cambrian. The development of family groups and the distribution of species from the

Cambrian to the Recent is traced with comments on the remarkably little change the chitons have undergone in recorded geologic time. The number of named fossil species is now at least 307, divided as follows: Paleozoic, 68, or 22%; Mesozoic, 25, or 9%; Cenozoic (excluding Recent species), 214, or 69%. Living species now total about 500.

The basis for a system of classifying the chitons is reviewed and a tentative revised classification is offered, in broad outline, for consideration.

Notes on the Natural History of Nomaeopelta, a Remarkable Genus of Limpets by Dr. S. Stillman Berry.

(Illustrated with mounts of the type species.)

(Abstract)

The genus discussed is described in the author's Leaflets in Malacology, Vol. 1, no. 16, p. 91-2, May 31, 1958 and is based on the elaborate sensory equipment of the mantle margin. Type of the genus is *Acmaea dalliana* Pilsbry, 1891.

On the Higher Classification of the Haliotids by Robert R. Talmadge.

(Abstract)

An attempt was made to coordinate the shells and the animal parts in the higher classification of the Haliotidae. It was found that, in two cases, there were definite animal as well as shell differences. However, in the majority of the specimens examined, there appeared to be no noticeable correlation between shell groups and their respective animals.

One feature common to all of the majority of the specimens was a thickened epipodium, that varied from species to species, but which at this time could not be evaluated beyond the species level. A brief summary of the generic and/or sub-generic names that have been utilized indicate that by far the majority of these have been based upon shell features only, with little work on the anatomy in such comparisons. Much more work is needed before we fully understand this family.

Cypraea mus Needs Attention by Crawford N. Cate.

(Illustrated with sets of specimens from the west Atlantic, West Africa and the Mediterranean.)

(Abstract)

The habitat and general range of *Cypraea mus* Linne has long been one of confusion and doubt. Locality labels in many worldwide collections, and early authorities such as Tryon, indicated it as coming from the Atlantic Ocean, from West Africa, the Mediterranean and points in the Caribbean Sea, but a definite locality was never given within these widely generalized areas.

By process of elimination and by direct contact with collectors in all these areas, doubt has been removed on the true habitat of *Cypraea mus*, and a definite range established for this shell in the coastal waters of Colombia and Venezuela, where it has been collected in recent years in a freshly dead condition, washed up on the beaches. Localities in West Africa and the Mediterranean have been eliminated as the habitats of this shell by the collecting authorities in these areas.

Some Notes about Modiolus by Emery P. Chace.
(Illustrated with specimens and pen and ink drawings.)

(Abstract)

A few notes and examples that attempt to make identification of the misunderstood species of *Modiolus* of the West Coast of North America much easier.

The Continuing Battle against the Giant African Snail by Dr. Albert R. Mead.
(Illustrated with Kodachrome slides.)

(Abstract)

Within the past few months, the giant African snail, *Achatina fulica* has spread to Kauai, the third island in the Hawaiian group to become infested. Intensive biological control measures were initiated immediately. It has also been reported to have spread north in the Ryukyu Islands, beyond Okinawa, to Amami-o-shima. In December, 1957, the author found the snail in central Bangkok, Thailand. The disease syndrome (cf. SCIENCE, 123: 1130-1131) in Thailand and Guam populations was found to be appreciably different than that in Ceylon populations. The whole epidemiological and symptomatological picture in the Oahu (Hawaiian Islands) populations has made substantial changes since examinations were conducted in 1955; both the incidence and the intensity of the disease have increased greatly. On Oahu, natural transmission of the disease has taken place between *A. fulica* and *Subulina octona* and *Bradybaena similaris.* Experimental transmissions in Oahu were successful. By using symptom-free *Limax flavus* (found both in Oahu and Arizona) as a vehicle for transporting the viable etiological agent from Oahu to Arizona under Federal permit, successful transmission was made to *Helix aspersa.*

Within 82 days after inoculation, 15 of 106 specimens (14.15%) showed strikingly atypical but clearly positive symptoms. Modification of the etiological agent by passage through multiple hosts is suspected. Additional inoculations and histopathological examinations are being conducted in an effort to determine the nature of the causative agent, pathology, and course of the disease.

The growth-promoting factors of the dried snail meal from *Achataina* were checked in a second series of controlled chick feeding experiments. The results support directly the earlier suggestion that the use of the giant snails as a chick feed supplement would introduce a controlling factor of profitable proportions.

The Type Locality of Aesopus goforthi Dall by Dr. Joshua L. Baily, Jr.

(Abstract)

This species figures in the literature of malacology only three times—the original description in the Proceedings of the National Museum for 1911, the only illustration in Bull. 112 in 1921, and in a check list by Allyn Smith and Mackenzie Gordon in the Proceedings of the California Academy of Sciences in 1948. All three references cite Monterey as the type locality, but Smith and Gordon state the species has not been taken since the original finding and question the authenticity of its occurrence so far north.

The speaker agreed that this was probably a more southerly species, inasmuch as Mr. Goforth was a resident of La Jolla and an assiduous collector on the beach within a few miles of his home. He is not known to have collected in Monterey. The speaker knew both Mr. and Mrs. Goforth personally, and supplemented his remarks with some personal reminiscences and anecdotes from the days they lived in La Jolla at the beginning of the century.

The Snail, Rumina decollata (L) in Arizona by Lloyd I. Showers, read by Dr. S. Stillman Berry.

A brief report on the recently-discovered occurrence of this species in Arizona.

The Bottom of the Ocean by George Kanakoff.

(Illustrated with pen and ink drawings.)

Clipperton Island: Easternmost Atoll of the Pacific by Edwin C. Allison.

(Illustrated with colored slides showing the flora and fauna of the district.)

(Abstract)

Clipperton Island is a small near-atoll which is comprised of a low ring of coral rock enclosing a deep fresh-water lagoon with Clipperton Rock, an indication of the island's volcanic origin, at its southern edge. The island's remote location in the eastern Pacific, approximately 670 miles southwest of the central Mexican coast and 1800 to 2000 miles east of the nearest oceanic islands, the Marquesas and Hawaiian Islands, enhances the significance of its fauna. Mollusks represent Indo-Pacific and Panamic faunal provinces in a ratio of about 3 to 2. Very few species are endemic. Similarly mixed biogeographic affinities, though in different proportions, are recognized among corals, echinoids, ostracods, and foraminifera.

The Taxonomy of the Sacoglossa by Patrick Milburn.

(Illustrated with projected slides.)

(Abstract)

The Sacoglossa, a group usually considered an order of the Opisthobranchia, may be divided into two groups based on the number of visceral nerve ganglia and mode of respiration.

The first characterized by three ganglia and respiration by entire parapodia, contains the *Oxynoidae* and *Elysiidae.* The second, with respiration by divided parapodia or cerata and with two visceral ganglia, contains *Lobiger,* which may have to be placed in a family separate from *Oxynoë,* and the nudibranch-like forms of the families *Hermaeidae* and *Stiligeridae. Olea,* from Friday Harbor, should be investigated to see whether it should be placed in the *Stiligeridae.* The nudibranch-like forms may be distinguished from true eolid nudibranchs with which they might be confused on the basis of their rhinophore tentacles. Sacoglossids have rhinophores either hollow and slit, solid and grooved, or lack them entirely, while eolid nudibranchs have solid rhinophores with pores at their tips. Due to the gradual transition between the nudibranch-like forms lacking a shell and mantle cavity, and the true bubble-snails, it is suggested that this group be included in the Order Tectibranchia, and that its members be looked upon as highly evolved tectibranchs.

Rare Shells in Kodachrome by Ross Stotter.

(Colored slides of many rare and beautiful shells were thrown on the screen with emphasis on representatives of the Family *Volutidae*.)

A Technique for Preparing *in toto* Mounts of Molluscan Anatomical Dissections by Dr. Wendell O. Gregg.

(Illustrated with screen projections of specimen mounts showing results of the techniques used.)

(Abstract)

In a study of the comparative anatomy of the reproductive systems of our western helicoid snails, the need arose for a method of preparing *in toto* mounts of these structures which could be preserved indefinitely, since preservation of these dissections in liquid preservative has proven unsatisfactory. The *in toto* mount permits ready re-examination and comparison. It may be photographed at any time after the preparation is completed. The process is typically one of dehydration and clearing the specimen, and mounting in one of the common mounting media between two 50 by 75 mm. slides. Canada balsam and permount have been used as mounting media, the latter being found to be the most satisfactory. By using a stain, internal characters of the organs, such as the plicae and papillae on the inner surface of the penis tube of *Oreohelix* or the double-tube structure of the penis of *Helminthoglypta,* may be seen in the cleared specimen.

The stained dissection is arranged on the lower slide. The preparation is then covered with a second 50 by 75 mm. slide which has received a coating of vaseline on the under surface. The preparation is gently compressed with weights placed on the upper slide and the two slides are tied together at both ends while the weights are still in place. Dehydration and clearing is accomplished as follows: Place in 25% isopropyl alcohol for 24 hours, then allow to remain for three days in each of the following: 50%; 70%; 80%; 90%; 95%; and 100% isopropyl alcohol; toluene and isopropyl alcohol, each 50%; followed by four changes of toluene, three days in each. The specimen normally adheres to the lower slide. The thin coating of vaseline on the under surface of the cover slide prevents the specimen from adhering to it and it does not interfere appreciably with dehydration. The first change of toluene dissolves the vaseline. When removed from the fourth change of toluene, the ties are removed, the slides separated, the mounting medium added, and the upper slide replaced, after which the mounting medium is allowed to harden. These mounts are then stored in a horizontal position.

Comment: Dr. Berry stated he had been familiar with Dr. Gregg's work and that it had been developed only after the most painstaking experiments with various techniques over a period of several years. He said he considered that Dr. Gregg had accomplished one of the most important advances in malacology that has been made in many years, and that Dr. Gregg should be accorded great credit for this contribution.

The New Draft of the International Rules of Zoological Nomenclature by Dr. Myra Keen.

(Abstract)

The International Code was first adopted by the International Congress of Zoology in 1901, after more than a century and a half of binomial name-giving without formulated rules. In this Code, the principle of priority was given so central a place it was called a "law." However, when research began to bring to light neglected names that upset familiar terminology, so many workers became unhappy that relief was voted at the 1913 Congress, giving the International Commission, which is the interim executive body, Plenary Powers to set aside the Rules in hardship cases. Over the years and especially since 1930, a second basic concept—that of types—has developed, adding to the problems of priority for many taxa and accelerating the pace at which zoologists have petitioned that the Plenary Powers be invoked to protect long-used but threatened names.

The new draft edition of the Rules is an attempt to integrate the present rules with the numerous recommendations and decisions of the Commission, to form one unified and logical code. Although the order of articles in the code has been completely changed, the major portion of the text will probably be willingly accepted by most taxonomists however complex and formidable the result may appear to the novice. Nevertheless, careful thought should be given to two innovations that were voted by the last Congress, at Copenhagen in 1953: (1) the principle of conservation, which would preserve any name in use more than 50 years, and (2) the setting up of challenge periods of varying lengths for several types of appeal, with or without subsequent Commission action. Both of these point up a new trend in systematics—nomenclature by the list, not by rules. Carried to the extreme (and this is the direction toward which we seem to be headed), this would mean that one could determine the correct name for a taxon only by consulting the "Official List," the first volumes of which are even now being published, and, during the interval between issues of the Lists, by subscribing to the Bulletin and to the Opinions series of the Commission. Up to now these publications have been prohibitively costly, but perhaps the mass production that would be needed if this trend continues would bring the price down. It may be too early to say whether all this represents progress in taxonomic procedure or is a backward step, but the issues involved should be clearly understood before a new Code is formally adopted.

Tiphyocerma, a Strange Gastropod by Dr. S. Stillman Berry.

(Abstract)

A new genus and species, *Tiphyocerma preposterum*—a "preposterous little nightmare"—is discussed because of its unusual characters. Its description is published in the author's Leaflets in Malacology, Vol. 1, no. 15, p. 85-6, March 28, 1958.

Otoliths — their Importance and Uses by John E. Fitch.
(Illustrated with series of examples in Riker mounts.)

(Abstract)

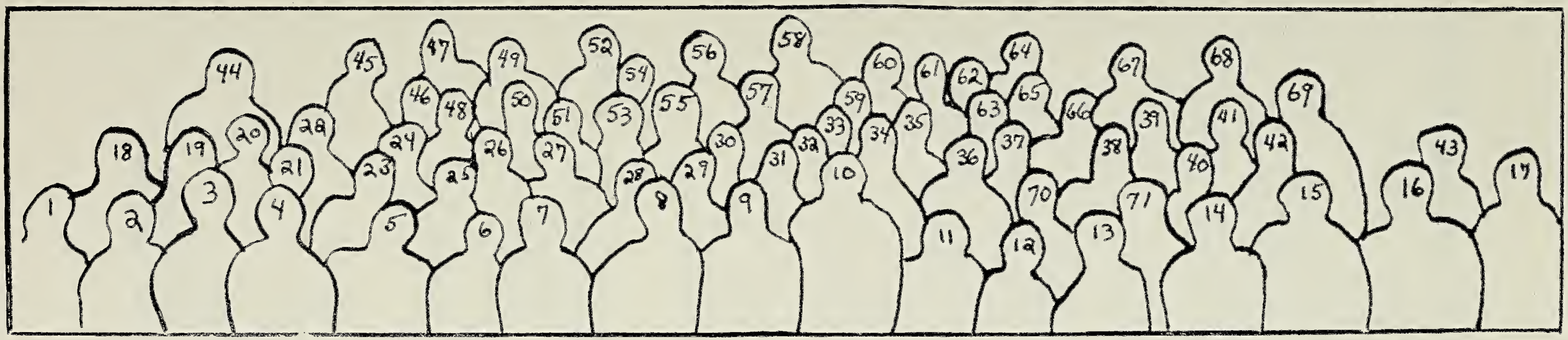
All modern fishes have three sets of otoliths or earbones each. Man appears to have first noted this phenomenon around the time of Aristotle, collected the stones for use in treating certain diseases and for the good fortune they supposedly would bring. They have been used in systematic work (fish identification) since the mid-1800s. The fish use them for equilibrium, muscular tonus and hearing. The sound-producing fishes have the largest earbones. They are composed of organic matter and calcium carbonate crystals (aragonite) in proportions of about 5 and 95 percent respectively. Modern man uses them for fish classification, ornaments, identifying the stomach contents of various fish predators, ageing fish, determining age at first spawning, stumping students in classroom examinations, and so forth.

Fish have been leaving their earbones in various fossil deposits since Eocene times at least. A Pliocene deposit (San Diego Formation) recently excavated by the Los Angeles County Museum yielded 3178 otoliths, resulting in identification of 29 species representing 24 genera in 12 families. Most of these fishes are to be found living off Southern California in some abundance today.

Respectfully submitted,

Mrs. John Q. Burch, Secretary Pro Tem

ELEVENTH ANNUAL MEETING, AMERICAN



1. Florence LaFayette, 2. Lucille Zellers, 3. Crawford Cate, 4. Emery Chace, 5. Martha Badovinac, 6. Grace Alexander, 7. Muirid Herring, 8. Rose Burch, 9. Albert Mead, 10. John Fitch, 11. Evelyn Wilson, 12. Priscilla Militante, 13. Muriel Olson, 14. Ruth Bancroft, 15. John Q. Burch, 16. Merton Hinshaw, 17. John Korver, 18. Dorothy Brown, 19. Ann Brown, 20. Hazel Jeschien, 22. Nelson Baker, 23. Pete Badovinac, 24. Helen Hunt, 25. Lois McMakin, 26. Marianna Paulson, 27. Gladys Demuth, 28. Elsie Chace, 29. Neil Marshall, 31. Stillman Berry, 32. Patrick Milburn, 33. Elsie Hutson,, 34. Edwin Allison, 35. Allyn Smith, 36. Mary Handley, 37. Mary Long, 38. Joseph Rosman, 39. Mrs. R. Stotter, 40. Faye Howard, 41. Mrs. Josh Baily, 42. Roscoe Stotter, 44. Virgil Herring, 45. John Strohbeen, 46. Mrs. John Strohbeen, 47. Leo Hertlein, 48. Edna Fletcher, 49. Howard Fletcher, 50. Mary Turver, 51. Eva Mae Fletcher, 52. John Siebert, 53. Myra Keen, 54. Robert Alexander, 55. Mary Larson, 56. Barry Roth, 57. Bessie Harris, 58. George Kanakoff, 59. Eleanor Korver, 60. Winifred Arnold, 61. Harry Turver, 62. Jean Cate, 63. Clara Hewitt, 64. Robert Talmadge, 65. Mrs. Fredrick Arnold, 66. R. G. Hewitt, 67. Wendell Gregg, 68. William K. Emerson, 69. Joshua Baily, 70. H. Kris Rosman, 71. Gladys Archerd.

ATTENDING THE AMU PACIFIC DIVISION MEETING

Mr. and Mrs. Robert Alexander, La Mesa, California
Edwin C. Allison, Berkeley, California
Mrs. Gladys Archerd, Berkeley, California
Mrs. Frederick T. Arnold, Long Beach, California
Miss Winifred H. Arnold, Long Beach, California
Mr. and Mrs. Pete Badovinac, Roseville, California
Nelson Baker, Santa Barbara, California
Dr. and Mrs. Joshua L. Baily, Jr., San Diego, California
Phoebe Balch, Lafayette, California
Ruth Bancroft, Walnut Creek, California
Dr. S. Stillman Berry, Redlands, California
Jack Bradbury, Balboa, California
Dorothy and Ann Brown, Los Angeles, California
Mr. and Mrs. B. W. Brown, Lodi, California
Mr. and Mrs. John Q. Burch, Los Angeles, California
Helen Burton, Oakland, California
Mr. and Mrs. Crawford N. Cate, Los Angeles, California
Mr. and Mrs. E. P. Chace, San Diego, California
Keith W. Cox, Woodside, California
Gladys Demuth, Sacramento, California
Dr. William K. Emerson, New York City
Mr. and Mrs. John E. Fitch, San Pedro, California
Edna Fletcher, Hemet, California
Mr. and Mrs. Howard L. Fletcher, Redlands, California
Mrs. Floy Graham, Berkeley, California
Edith and Roland Gray, Sunnyvale, California
Wendell O. Gregg, M.D., Los Angeles, California
Victor Haack, Petaluma, California
Mary Handley, Berkeley, California
Captain and Mrs. Marion Harris, Rancho Cordova, California
Mr. and Mrs. Virgil Herring, El Cerrito, California
Dr. Leo G. Hertlein, San Francisco, California
Clara D. and R. G. Hewitt, Santa Anna, California
Merton E. Hinshaw, San Francisco, California
John J. Hoffman, Berkeley, California
Mrs. Faye Howard, Pacific Palisades, California
Helen Hunt, Berkeley, California
Elsie Hutson, Sacramento, California
Hazel Jeschien, Berkeley, California
George P. Kanakoff, Los Angeles, California
Homer P. King, Los Angeles, California
Dr. A. Myra Keen, Palo Alto, California
Eleanor Korver, Berkeley, California
Dr. Phyllis Kutsky, Lafayette, California
Florence LaFayette, Carmichael, California
Mr. and Mrs. Douglas Larson, Concord, California
Mr. and Mrs. Elmer Lindquist, Oakland, California

Mary E. Long, Sonora, California
Neil Marshall, Berkeley, California
Dr. and Mrs. Albert R. Mead, Tucson, Arizona
Mrs. Freda B. Merrill, Oakland, California
Patrick Milburn, Corona Del Mar, California
Priscilla J. Militante, Quezon City, Philippines
F. Stearns MacNeil, Palo Alto, California
Lois McMakin, Sacramento, California
Muriel Olson, Berkeley, California
Marianna Paulson, Berkeley, California
Elton L. Puffer, San Francisco, California
Joe and H. Kris Rosman, Berkeley, California
Barry Roth, Palo Alto, California
Frank Russ, Alameda, California
John Saxby, San Francisco, California
John Sibert, Balboa, California
Allyn G. Smith, Berkeley, California
Mr. and Mrs. Ross Stotter, Imperial Beach, California
Mr. and Mrs. John P. Strohbeen, Santa Cruz, California
Ray Summers, Petaluma, California
Robert Talmadge, Willow Creek, California
Spencer Thorpe, El Cerrito, Calif.
Mr. and Mrs. Harry Turver, Yucaipa, California
Jane Westfall, Berkeley, California
Evelyn Wilson, Oakland, California
Mrs. Lucille Zellers, El Cerrito, California

REPORTS OF AFFILIATED SHELL CLUBS

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: We meet at the Y.M.C.A., 6th and American Avenue, Long Beach, California on the 2nd Sunday of the month at 2:30 P.M.; visitors to our area are always welcome.

At the 1957 Christmas party gifts of shells were exchanged, a covered dish supper was enjoyed and Dr. Frank Parkhurst was elected to be our president for the following year.

In May the Club was saddened by the death of our sponsor, Miss Julia Ellen Rogers. Author of The Shell Book, The Tree Book and a series of nature study articles, she will be missed by her family and by friends around the world.

In August our shell auction and watermelon picnic was held at the home of Mr. and Mrs. Fred Muche at South Gate. Collecting around Long Beach has not been too good in recent years, but many of our members collect in Mexico bringing back beautiful shells.

Other projects: a small directory listing names and addresses of members of the Long Beach Shell Club was compiled and furnished to members, we had a booth at the Long Beach Hobby Show, and in answer to several letters from school children in Missouri boxes of shells were sent to the school and acknowledged by the teacher.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, Homer P. King, President: We have 72 regular and 4 honorary members. Meetings are held on the first Tuesday of each month (7:30 P.M.) in the Los Angeles County Museum, Exposition Park. Visitors always welcome. (During baseball season meetings are held on a Tuesday night when the local team is not using the nearby coliseum.) Dues are fifty cents per year, and the Minutes of the Club, edited by John Q. Burch and running about 180 pages (ten issues) may be obtained on a subscription basis for $2.50.

Speakers for the year through January, 1959: Dr. N. T. Mattox, Mrs. Elsie Chace, Mr. Mel Fisher, Mr. Don Shasky, Mr. John Q. Burch, Mr. Bernard Altshuler, Dr. Wendell O. Gregg, Dr. William K. Emerson, Mr. Ned Baker, Mrs. Rose Burch, Dr. Jens Ostergaard, Mr. Crawford Cate, Mr. George Kanakoff, Dr. S. Stillman Berry, Mr. John Fitch, Mr. Emery P. Chace, Mr. R. O. Stotter, Mrs. Jean Wilkins. Four reports were given on collecting stations on the Pacific coast and in the Gulf of California. An excellent shell display was a feature of each meeting; those of the Cates, Burches, Chaces, Lloyd Berry and John Fitch were exceptional for size or rarity.

Eighteen members attended the AMU Pacific Division meeting and presented a total of nine papers. Two attended the national AMU meeting.

Officers: President, Homer P. King; Vice-President, Bernard Altshuler; Corresponding Secretary, Rose Burch; Recording Secretary, Faye Howard; Treasurer, Dorothy Brown; Editor, John Q. Burch; Display, Mr. and Mrs. Crawford Cate; Current Publications, George Kanakoff, Emery Chace, John Q. Burch, John Fitch.

NORTH CAROLINA SHELL CLUB, Roberta E. Lytle, Secretary: The most exciting news from the North Carolina Shell Club is its phenomenal growth—one hundred and nineteen members in little more than a year, and most of them "landlubbers!"

Of our four meetings, two were shelling weekends, the May weekend at Yaupon Beach, North Carolina and in September in the vicinity of Morehead City with a special excursion to the Shackleford Banks. Neither trip netted any spectacular finds, but everyone had a good time. The March meeting was held at Chapel Hill in Wilson Hall of the University. Dr. Charles Jenner presented a fine discussion with colored slides and movies on the Ecology of the Marine Mud Snail, *Nassarius obsoletus*. In addition, Dr. D. M. R. Carriker showed a silent color film of living mollusks, enlivened with an excellent discussion.

"Radioisotopes in Marine Research" was the topic of an illuminating lecture by Dr. Theodore R. Rice, a part of our September program.

The December meeting we hope will be held at Duke University, with a special trip to the home of Dr. B. W. Fassett whose shell collection is quite famous.

Our next report will give the names of our new officers. One more note—your correspondent went shelling at Ft. Macon Beach (an extension of Atlantic Beach near Morehead City) the day after hurricane Helene with great visions of exotic visitors from the Caribbean. Alas, nothing but broken shells!

PACIFIC SHELL CLUB, Mrs. S. Ralph Hall, Assistant Secretary: We meet on the third Sunday of the month (October through May) at the Los Angeles County Museum. Now in its fourteenth year the Pacific Shell Club is open to all who are interested in shell collecting. Age is no barrier since there is a branch club for the younger collectors, the Los Angeles Junior Shell Collectors.

Officers for 1957-1958: Museum Sponsor, Dr. Howard R. Hill; President, Mrs. S. Ralph Hall; Vice-President, Mr. Arnold Johnson; Treasurer, Mr. Isaac Cowgill; Secretary, Mrs. James Leyh; Assistant Secretary, Mrs. S. Ralph Hall.

At the time of publication of the new club directory there were 151 members of which 34 were Junior Club members. Interest and enthusiasm run high during meetings which cover a host of topics and problems relating to shell collecting. Programs include speakers from club membership as well as others well known in the field of conchology. Outstanding color slides were shown over the past year, predominant of which were views of beautiful natural sea life by Fred Ells of Santa Monica. Other topics were collecting in Africa, Hawaii, Okinawa, Florida, West Mexico and the Pacific Coast of California; preparing shells after collecting, fossil shells, shells and parasites, talks by junior collectors, a shell movie, annual picnic, a shell contest with prizes for the best display—this last sponsored by Mr. and Mrs. Crawford N. Cate.

The Pacific Shell Club of Los Angeles extends to all AMU members a hearty invitation to visit us individually and/or collectively at our meetings whenever possible.

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, H. Kris Rosman, Secretary: The Northern California Malacozoological Club linked election of officers with its traditional Christmas Party held at the beautiful home of Mr. and Mrs. Philip Bancroft, a time of shell gifting, fun and delicious feasting. John Saxby, President; Ned Allison, Vice-President; H. Kris Rosman, Recording Secretary; Muirid Herring, Corresponding Secretary; Phoebe Balch, Treasurer, and Dr. Rudolf Stohler, Librarian. Total membership 77.

Ushered in with the New Year was the excitement that attends the news of sponsorship of the annual meeting of the AMU-Pacific Division. From this meeting until its inception, discussion of and preparation for this event consumed a major part of our evenings in session. And for the high praise we received afterwards, we take pride in the talent for leadership and execution demonstrated by our Lucille Zellers, which enabled her assistants to execute their assignments with a minimum of needed effort. Co-sponsor, by request, The Sacramento Valley Conchological Society. Headquarters: Shattuck Hotel. Lectures and special events, Life Sciences Building, University of California, Berkeley, California. Window displays in five stores and library helped to promote interest.

Programs sandwiched in between included: (1) Two one day and two weekend field trips. Specimens were identified in the area and at later meetings displays of "finds" were made by Mary Handley and other members. The scheduled dinner parties were a source of much fun. (2) Various displays associated with programs, rare shells personally collected in Fiji, Coral reefs, South Sea Islands (Helen Burton); deep sea diving equipment demonstrated by its expert user with shell specimens shown (Harry Hague); cowry collection slides (Ray Summers); a rare slug, *Testacella haliotidea,* shown by Dr. Cadet Hand; a prize winning limpet showing (H. Kris Rosman); (3) Travel and personal experiences; Sanibel Island (I. W. Ney); Caribbean Islands, Beach combing slides by guests (Maury Ward and Martin D. Rosman); (4) News of special interest: The first issue of our club's quarterly publication, edited by Helen Hunt, was distributed at the convention. Subscriptions available, yearly rate $1.00, single copies 25 cents each. Talk on West Coast *Acmaea* by Gladys Archerd; baby sitter to Dr. Hand's rare slugs during his absence and housed in her refrigerator (Lucille Zellers); review on the conduct of the *Conus striatus* and *Conus textile,* housed in one tank-source, Hawaiian Shell News, November 1957 (Joseph Rosman); Articles, review on abalone, skin divers, preparation of shells and related cartoons—source, January 1958 Skin Divers Magazine (Virgil Herring); (5) Study enterprises at meetings, Keen and Pearson's Illustrated Key to West North American Gastropod Genera.

Of special note is the interest developed between the Sacramento Conchology Club and ours. We visited their meeting in February, shared several field trips, and enjoyed their company at our October meeting, when they came specifically to hear Dr. Rudolf Stohler speak of his visit to La Jolla, the scientific value of SCUBA diving and his personal observations of the red tide plague at Punta Bunda Bay, Ensenada. This has proved to be a learning, gratifying exchange, well worth the travel time invested.

October 24 will feature a Shell Fair, membership participation, Sacramento Club invited, at the home of Helen Burton. Sale, exchange and donation of shells will prevail, with on the spot identification.

November meeting will feature election of officers for 1959. Culmination brings us back to where we started—a party at the home of Mr. and Mrs. Philip Bancroft.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Mrs. Howard Roeller, Secretary: Our club has of recent years limited its activities to monthly meetings during the early Fall, Winter and Spring. One of the winter meetings is in the form of a banquet at which time officers are elected, and a picnic during the summer provides a get-together for those who are not vacationing at the time.

One of our members has moved to Florida, another to Wisconsin. Letters from each of them and from a member of the club circulate in the form of a Round Robin, are read at the meetings and keep us all in touch though separated by a thousand miles or more. Our president winters in Florida, two of our members recently returned from an European tour; others vacation about the United States and all bring back shells or shell lore which they generously share with fellow members.

These papers were read during the past year: The Lure of Gem Stones, Clifford J. Awald; Shells of the Great Lakes Region, Mrs. Alice Gary; Fluorescence in Minerals and Shells, Clifford J. Awald; When the Tide Is Out on Mud Flats and Sand Bars, Gertrude M. Weber; Something About Shells, Margaret C. Teskey; Snail Pictures, Eugene Musial; Family Muricidae, Louise W. Becker.

Our officers: President, Mrs. Fred St. John Hoffman; Vice-President, Eugene Musial; Secretary, Mrs. Howard Roeller; Treasurer, Louise W. Becker.

CONNECTICUT SHELL CLUB, Gertrude W. Thompson, Secretary: Our club with a membership of twenty-seven held nine meetings during the past year, on the second Friday of the month; weather and the fact that several of our members winter in Florida reduce our attendance somewhat, but we look forward to hearing of their experiences when they return in the Spring. One of these, Mr. William Hutchings shares both his experiences and the snails he collects from the Florida Keys.

Others whom we were privileged to hear were Dr. William J. Clench who spoke on Molluscan Zones of the East Coast, Mr. Earl Reed who told of exchanging with collectors in far away places, demonstrating his method of packing shells to ensure their safe delivery, and one of our younger members, Alan Kohn told of collecting for Yale in the Indian Ocean, near Mombasa and the Seyschelles. Mr. Reed spoke to us again on a later occasion, his topic the Volutidae.

We are starting a collection of taken-alive Connecticut shells for the Peabody Museum, also are starting a library of reference books which our members may borrow. Another project is a scrapbook of articles on the subject of shells. We also voted to have abstracts printed of the lectures we have enjoyed.

Club president Percy Morris gave us a delightful report on the annual meeting of the American Malacological Union which he attended in September. He met again many of the friends who attended the '57 meeting here in New Haven.

THE NEW YORK SHELL CLUB, Catherine Ahders, Secretary: The officers for this year, as for last year, are: President, Mr. Edward Cowles; Vice-President, Mr. George Jacobs; Treasurer, Miss Mathilde Weingartner; Corresponding Secretary, Mrs. Josephine Wichern; Recording Secretary, Miss Catherine Ahders. Meetings are held on the last Sunday of September and October, then on the first Sunday of each month from December to June at 2:00 P.M. in the American Museum of Natural History. Between 40 and 50 persons attend these meetings.

Two new and successful features have been added to monthly meetings: first, a question box in which members submit questions which are answered by other members able to do so. The second feature, the Shell of the Month; each month a different member shows a shell then tells briefly why it is especially prized by him for reasons which may be personal or scientific.

During the year we had six guest lecturers. In September, Mr. and Mrs. Theophil Kuczynski showed us their slides of marine life which so delighted the members of the AMU at Yale. In October, Dr. Dodd gave a talk on his unusual collecting trip around South America. In December, Dr. William Clench spoke to us about Freshwater Mollusks of Southeastern United States. In January, Miss Virginia Orr intrigued us with her description of collecting in Zanzibar. In March, Dr. William Emerson told of his recent collecting trip for the American Natural History Museum along the coast of Lower California. In May, Mrs. E. S. Travers presented a stimulating talk on the rôle of shells in Western culture from Aristotle to Dali.

Another program format with which we experimented was a symposium on curatorial methods; areas covered were cleaning, storing, display and cataloging. Many members thus learned of more satisfying and efficient ways of taking care of their shells.

The NEW YORK SHELL CLUB NOTES, edited by Mr. M. K. Jacobson comes out ten times each year and recent issues have had as many as four pages. Letters from correspondents, "Some Rarer Shells" and editorial comment make this a lively publication.

At the annual auction the club celebrated its tenth year of existence with a real party including ice cream, coffee and cake. A door prize of a beautiful *Scaphella junonia butleri* was donated by Mr. Nick Katsaras.

Following the precedent set last year, the annual field trip was made by bus. About forty members collected land and freshwater shells and had an enjoyable day.

COASTAL BEND SHELL CLUB, Mary Catherine Magaw, President: The Coastal Bend Shell Club of Corpus Christi, Texas was organized on June 16, 1958 with a membership of twenty. The club has held monthly meetings thereafter with an average attendance of twenty-five. Ours is the second shell club in Texas, the first to be formed on the Gulf Coast.

Temporary officers were chosen with our organizer, Mrs. J. Jud Taylor as President. In September these officers were elected for the first regular term: President, Mary Catherine Magaw; Vice-President, Mrs. Edward J. Duffin; Secretary, Mrs. Hubert Manire; Treasurer, Mrs. J. A. O'Brien.

Quite ambitious for a new club, we invited the American Malacological Union to hold their 1959 meeting in Corpus Christi. Since prior commitments made acceptance impossible, we wish to extend this invitation to the AMU to hold the 1962 meeting with us.

Our club has members who collect Texas Gulf Coast shells as well as worldwide, and as a group we are interested in exchange.

ST. PETERSBURG SHELL CLUB, Gertrude Brakefield, Recording Secretary: Our club held ten meetings during the past year. These were held in the Assembly room of the City Hall on the second and fourth Fridays of the month beginning in November. Great interest is shown in these meetings and our year closed with 132 members of which 9 are honorary.

Special reports were given by various members on the following shell families: Volutidae, Naticidae, Chamidae, Spondylidae, Veneridae, Fissurellidae, Cymatiidae, and Columbellidae. Land and freshwater shells were touched upon and there was an interesting discussion of the Crustacea. Our program chairman Dan Steger added greatly to these reports by giving a lecture and showing colored slides on the family being studied.

One of our guest speakers was Roy L. Morrison of San Diego, California, who gave an interesting talk on shelling on the California coast. Joseph Conkling also presented an illustrated talk of a recent shelling trip to Mexico. A color sound movie was shown by James Kelly, one of our younger members, on Living Marine Life in Tampa Bay and the Gulf of Mexico. This was a fine film, made by himself, and showed the habits and locations of many local shells.

Our field trips under the leadership of Alger P. Blaine are enjoyed and well attended by members and visitors who are always welcome. It was reported that on one of these trips over 100 species were found in Tampa Bay.

The annual shell show was held February 26th - March 3rd at the Treasure Island Auditorium. Many beautiful collections of local and foreign shells were on display. The Smithsonian Institution Award was won by Mrs. Ruth E. Craine of Norwich, N. Y. for her collection of *Cancellaria*. A display of fossil shells from the North St. Petersburg fossil bed and arranged by Miss Edna Marcott was most interesting.

Our social gatherings included the Christmas shell exchange, the annual picnic on Mullet Key and a very pleasant meeting held at the St. Petersburg Historical Museum Society as guests of the Curator, Mrs. Oma Cross.

Officers for 1958-59: President, Mrs. Lulu B. Siekman; First Vice-President, Roger Dunn; Second Vice-President, Gertrude M. Weber; Treasurer, A. W. Fahrenbruck; Recording Secretary, Mrs. Barbara Steger; Corresponding Secretary, Mrs. Gertrude E. Brakefield.

SACRAMENTO VALLEY CONCHOLOGICAL SOCIETY, Florence LaFayette, Editor: This society was founded in 1951 by Paul H. Steele, a naturalist now deceased. Membership at present is forty-two, meetings held on the third Saturday of each month at the homes of members. Dues, $2.00 per year. Current officers: President, Lauren McCoy; Vice-President, Lary Long; Secretary-Treasurer, Bessie Harris; Librarian, Gladys Demuth.

The policy of the club is the study of shells at the monthly meetings, while more frequently small groups meet to collect and classify shells; chidren are encouraged to take an interest in shells and nature in general. Shells are sold or exchanged among the group and other interested groups, a library is being built for the use of all club members and a scrap book is compiled of items and pictures of shells and club members.

The club paper The Collector is now in its fourth year. Subscription, $1.00 per year. Editors: Florence LaFayette and Elsie Hutson.

SAN ANTONIO SHELL CLUB, Bitsy Mahavier, Secretary: The activities of our club are somewhat limited due to the fact that we are 150 miles from the nearest salt water. We have twenty-five members and at the present time are recruiting new ones. Regular monthly meetings are held on the fourth Monday in the educational building of the Laurel Heights Methodist Church. Following a business meeting the entertainment consists of lectures or panels on cleaning, preserving or collecting of shells, and we have enjoyed many wonderful films on the subject. We have at least one, sometimes two annual field trips to the Gulf Coast which are always very successful. Our club made up a very nice study collection of shells and presented it to the Audio-Visual Education Department of the school board, and we hope to do more of such work in the future. Our main objects are to study and exchange conchological data, to conduct public exhibits and to maintain a library for the use of the members.

Officers elected in September for a one-year term: President, Cmdr. S. C. Leslie; Vice-President, Mr. Frank Whitehead; Secretary, Bitsy Mahavier; Treasurer, Cleta Mahavier; Editor, Mrs. Marie Whitehead.

We share the hope of the Coastal Bend Shell Club that the AMU will honor our fair state by holding one of the annual meetings there at some future date.

GREATER BALTIMORE SHELL CLUB, Mary Ruth Buchness, Secretary-Treasurer: The official organization of the Greater Baltimore Shell Club took place in January, 1958, with the election of officers and the formation of committees. The results of this election: President, Mr. William Seip; Vice-President, Miss Letha Allen; Secretary-Treasurer, Mrs. Mary Ruth Buchness. Committees for book and shell purchasing, field trip planning, program organization and education were established. The club has about thirty members, mostly from the Washington-Baltimore area. Most meetings are held at the Natural History Society of Maryland with which the shell club is associated.

Following the organization meeting most of the activities of the club have included lectures, field trips, films, discussions, shell identification, and viewing private collections. Among the highlights of this year's meetings was the illustrated lecture by Dr. Joseph P. E. Morrison of the U. S. National Museum on Collecting in French Oceania.

We plan to enlarge the book collection of the Department of Mollusk library at the Natural History Society and began the project by presenting Abbott's *American Seashells* to the Society's library.

PHILADELPHIA SHELL CLUB, Robert J. L. Wagner, Secretary-Treasurer: The Philadelphia Shell Club, now in its third year, continues to grow and remain an active center for its 194 members. Our monthly meetings are held at the Academy of Natural Sciences. This year we were honored by two out-of-town speakers, Mr. Percy A. Morris of Yale University and Mr. Anthony D'Attilio of the New York Shell Club. Miss Virginia Orr gave an illustrated talk on a mollusk expedition to Zanzibar, and on another occasion our members gave a symposium on how to care for and arrange a shell collection. Our annual donation shell auction netted the treasury $173.00. This year's Proceedings of the Philadelphia Shell Club contains some of these talks and also a complete list of members. Back numbers (3) are available to non-members at $1.00 each.

The Shell Club is busy at work preparing for the 25th meeting of the A.M.U. which will be held at Philadelphia and nearby Haverford College in June. The 1958 officers were elected for a second term. The club regretfully accepted Mrs. Mary Abbott's resignation as Secretary because of pressure of work at home. The annual picnic was held on June 29 at the home and farm-estate of Dr. and Mrs. Edward G. Zerne in West Chester, Pa.

THE MALACOLOGICAL SOCIETY OF AUSTRALIA, Mrs. Thelma Hartley, Honorable Secretary-Treasurer: We have a membership of 125; our members are in every State in Australia, in Japan, New Zealand, Tasmania, Guam, Hawaii and the United States. We publish a Newsletter once every three months to, more or less, keep out-of-town members in touch with local events. This is mailed free to such members, while those able to attend meetings pick up their copies at that time.

We meet once a month on the last Monday. Papers are read, lectures heard, sometimes illustrated with colored slides, and at other times shells are exhibited and discussed. Regular field days are held on local beaches under a field leader for that day; lists are compiled of the shells taken on such occasions and kept for the Society records.

Our only social meeting is the annual meeting in November at which time officers are elected and a supper served. At the present time these are our officers: Honorable President, Denzil Hartley; Honorable Secretary-Treasurer, Mrs. Thelma Hartley; Patrons, R. Tucker Abbott, Joyce Allan, Bernard C. Cotton.

GREATER ST. LOUIS SHELL CLUB, Vaunita B. Haid, Recording Secretary: The Greater St. Louis Shell Club opened the 1958 season by electing the following officers: Mrs. Charles Lewis, President; Mrs. Robert Casey, Vice-President; Mrs. Winton Barker, Corresponding Secretary; Mrs. Lloyd Haid, Recording Secretary and Treasurer.

During the year, our president scheduled many events to publicize the club, including a public show, a lecture to the Academy of Science members, a radio talk and several newspaper articles, all of which are beginning to bring our club city-wide recognition. During the early Spring we participated jointly with the Rock and Minerals Club in a public display at the Webster Groves Veterans Club, and the enthusiastic response of those attending the show was most gratifying. In July we were very fortunate in receiving a visit from one of our West Coast correspondents and his family; those of us who were in town had a most delightful time exchanging shell lore and viewing colored pictures of this man's collection. Our president represented the club again this year at the A.M.U. meeting at Ann Arbor and her report was a feature of our first Fall meeting in October.

Again, may we urge all shell enthusiasts to call on us at any time they are passing through St. Louis.

CONSTITUTION OF THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the by-laws. Life membership may be purchased for the equivalent of twenty years' annual dues, with no further annual dues required. Honorary membership may be bestowed by an unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.
4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, Publications Editor, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact by-laws that interpret this Constitution, and such by-laws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.

BY-LAWS

1. The annual dues shall be two dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.
2. The President shall be empowered to appoint a nominating committee and such other standing and special committees as may be deemed advisable.
3. A nominating committee shall consist of not less than three nor more than five members of the Council, exclusive of existing officers. The duties of this committee shall be to prepare a list of nominations of officers and councillors-at-large for the ensuing year to be elected in accordance with Article 4 of the Constitution, this list to be presented at a business meeting of the Council held during an annual meeting of the American Malacological Union. No member shall be nominated for any office without his or her prior notification and consent.
4. A quorum of five council members is necessary before business may be transacted at any meeting of the Executive Council.

THE AMERICAN MALACOLOGICAL UNION EXECUTIVE COUNCIL

1958-1959

Officers

President	R. Tucker Abbott
Vice-President	Katherine Van Winkle Palmer
Second Vice-President	(Chairman, A.M.U.P.) John E. Fitch
Secretary-Treasurer	Margaret C. Teskey
Publications Editor	George M. Moore

Councillors-at-Large

John Q. Burch
Ruth A. Craine
Leslie Hubricht
Thomas E. Pulley

Past Presidents — Permanent Council Members

Paul Bartsch (1933)
William J. Clench (1935)
Joshua L. Baily, Jr. (1937)
Maxwell Smith (1939)
Horace B. Baker (1940)
Harald A. Rehder (1941)
Louise M. Perry (1943-1945)
Henry van der Schalie (1946-1947)
Myra Keen (1948)
Elmer G. Berry (1949)
Fritz Haas (1950)
J. P. E. Morrison (1951)
Jeanne S. Schwengel (1952)
Joseph C. Bequaert (1954)
Morris K. Jacobson (1955)
Allyn G. Smith (1956)
Ruth D. Turner (1957)
Aurele LaRocque (1958)

PACIFIC DIVISION

Officers

Chairman	John E. Fitch
Vice-Chairman	Rudolf Stohler
Secretary	Faye Howard
Treasurer	Eva Maye Fletcher

BY-LAWS OF THE AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

(Adopted June 28, 1958)

Article I

Section 1—This organization shall be known as the American Malacological Union, Pacific Division, and as such it is an integral and inseparable part of the parent organization, the American Malacological Union.

Section 2—The purpose in forming the Division is to give members of the American Malacological Union living west of the Rocky Mountains in the Pacific Coast region opportunity to attend regional annual meetings.

Section 3—No provision in these By-Laws shall be interpreted as superseding or abridging provisions in the Constitution and By-Laws of the national organization.

Article II

Section 1—The administration of the affairs of the Division shall be vested in an Executive Board, which shall consist of the currently elected officers and the three most recent past Chairmen of the Pacific Division. Its Chairman shall be the current Division Chairman.

(1) The terms of members of the Board shall begin one month after the close of the annual meeting.

(2) Vacancies on the Board may be filled by appointment of the Chairman, preferably from among previous Chairmen.

(3) No person shall be a Board member who has not been a member of the American Malacological Union for at least two years.

Section 2—The Board shall meet annually during a Pacific Division annual meeting, prior to the regular business meeting, and at such other times as agreed upon by the majority of the Board. Insofar as possible, matters requiring action between regular annual meetings shall be handled through a poll of the Board by the Chairman.

Section 3—The time and the place of the Annual Meeting shall be decided upon by the Board.

Section 4—The Board shall pass on all matters involving policy; but its decisions are subject to ratification by a majority vote of the Division membership attending the annual meeting. The Board shall act in an advisory capacity in all other matters brought to it by the Chairman.

Section 5—The officers of the Division shall be a Chairman, a Vice-Chairman, a Secretary, and a Treasurer.

(1) The terms of office shall normally be one year, beginning one month after their election at any annual meeting.

(2) Whenever an annual meeting of the national organization is held on the Pacific Coast, the currently elected Division officers shall serve for a second year without re-election.

Section 6—The officers shall perform the usual duties of such offices.

(1) The Chairman shall preside at annual meetings and be generally responsible for the activities of the Pacific Division. He may delegate

responsibility through the appointment of such committees as he deems desirable. He shall, as Second Vice-President of the national organization, act as liaison with the officers and the Executive Council of the parent body, either personally or through the Division Secretary.

(2) The Vice-Chairman shall act for the Chairman if the latter is unable to serve and shall assist the Chairman on request.

(3) The Secretary shall take all minutes of business and board meetings, transcribe them as promptly as possible, and transmit a copy to the Chairman for review. The Secretary shall also take such notes during annual meetings as may be appropriate, obtain abstracts of papers presented at annual meetings, prepare an annual report of the Pacific Division meeting, and submit this report to the Chairman for review. Upon approval, this report shall be transmitted by the Secretary to the national Secretary-Treasurer for inclusion in the AMU annual report. The Secretary shall also handle all necessary correspondence, as directed by the Chairman or as otherwise required, keep the other members of the Executive Board informed on matters that should concern them, and maintain the records of the Division.

(4) The Treasurer shall be responsible for handling and recording all funds of the Pacific Division, including the per capita dues allowance from the Secretary-Treasurer of the parent organization. He shall receive such national AMU dues from new or regular members as may come to him and shall forward them promptly to the AMU Secretary-Treasurer. Within one month after the annual meeting, he shall submit an annual report to the newly elected Chairman; this report is to be presented for approval before the next Executive Board meeting and the annual business meeting. He shall maintain an up-to-date list of the AMU members living west of the Rocky Mountains who are in good standing and shall keep the Secretary informed of the current status of this list.

Section 7—Officer candidates shall be nominated by a Nominations Committee of three appointed by the Chairman from the list of past Chairmen of the Pacific Division. The Committee shall present its slate of nominations at the annual business meeting. If there is more than one candidate for an office, a straight majority vote on written ballot will determine election.

(1) No candidates shall be nominated without prior consultation as to their willingness to serve.

(2) Membership in good standing in the American Malacological Union for a period of not less than two immediately prior years and residence west of the Rock Mountains shall be required for eligibility as officer candidates.

Article III

A proposal to amend or repeal any by-law must bear the signatures of at least ten AMU members of the Pacific Division in good standing. The signed proposal must be submitted to the Executive Board at least two months before the annual meeting for verification of its constitutionality. It may be discussed at the subsequent annual meeting, but its adoption requires a two-thirds majority affirmative vote of the members present at the annual meeting the next year following its proposal.

NOTES AND NEWS

Reprints of the abstracts appearing in this bulletin are available at printer's rates. Orders must accompany manuscript.

* * * *

From a July, 1958 letter from Allyn G. Smith: "Had a lovely three weeks in Japan sight-seeing and talking with various malacologists. Saw a couple of fabulous private collections—one belonging to Dr. Sakurai, very fine and scientifically curated; another, Mr. Teramachi in Kyoto—beautiful stuff. Had a whole afternoon "talking" shop with the Emperor in his Biological Laboratory in the Imperial Palace—quite an experience. He is a top nudibranch expert, as you doubtless know."

* * * *

The AMU twenty-fifth annual meeting will be held June 30 to July 3, 1959 at Haverford College and will be sponsored by the Philadelphia Shell Club. This handsome private college is located on the west edge of Philadelphia and dormitory rooms and other facilities will be available. Rates and all details will be supplied to members about May first; anyone desiring prior information may contact Dr. Tucker Abbott or the AMU secretary.

* * * *

From George Pattison, corresponding member: "I worked in the Klondike, then as one of the last of the windjammer sailors rounded Cape Horn several times. Now at eighty I have my memories, my shells, a good wife and a snug harbor here (in South Australia). I do a fair amount of collecting still. On my latest trip I saw two *Cypraea vericonus;* one was depositing its eggs into a small cavity of rock, the other keeping guard over the eggs it had laid by squatting over the slight depression which served as a nest."

* * * *

The popular booklet HOW TO COLLECT SHELLS will be completely revised when the present supply (second printing) is exhausted. Authors desiring to bring earlier articles up to date or with new material should submit manuscripts to Dr. Aurele LaRocque, Department of Paleontology, Ohio State University, Columbus 10, Ohio. Especially desired is information on the technique of collecting by use of aqualung, new dredging methods, trapping, tracking, etc.

* * * *

. . . "Please change my address; we leave sunny California for dreary, rainy France within two weeks. Actually we are very pleased with the new assignment to Supreme Headquarters Allied Powers, NATO, Europe, ten miles west of Paris. It is considered very choice duty. We've always dreamed of the opportunity to visit the British Museum, Cambridge and the Saul collection, Brussels and the Dautzenberg collection. Will be there three years or more, if all goes well." (From a letter from M/Sgt. Edwin L. Fobes.)

* * * *

From John E. Fitch, Chairman AMU-Pacific Division: "We are planning to hold the 1959 meeting July 9th to 12th at the University of Redlands. Details later."

* * * *

From Dr. C. O. van Regteren Altena, Corresponding Member: "On July 1, 1959, it will be 25 years since the Netherlands Malacological Society was founded. In commemoration of that event the Society intends to organise a meeting on June 27-28, 1959, in Amsterdam, and on June 30 in Leiden. Following is the provisional program:

Saturday, June 27: Opening of an exposition illustrating various aspects of malacology in the Zoological Museum of the Municipal University at Amsterdam; banquet; lecture on some malacological subject. Sunday, June 28: Excursion to some locality rich in mollusca in a typical Dutch landscape. Monday, June 29: Discussion of the problems with which the keepers of public collections of mollusca are faced, and of the possibilities of a closer cooperation of these keepers.

Foreign malacologists who wish to attend this meeting are welcome, and are requested to give provisional notice of their intention to the secretary of the Society, Mr. J. J. Bernard, Nieuwersluisstraat 67, 's-Gravenhage, Netherlands before January 31, 1959. They will receive the program with a request for a definite promise of attendance before March 1, 1959."

* * * *

Dr. George M. Moore together with his family left Durham, New Hampshire in June to accept a Fulbright Grant to lecture in Zoology at Chulalongkorn University in Bangkok, Thailand. He expects to be away about one year, and in his absence Allyn G. Smith is serving as AMU Publications Editor.

HARRY EDGAR WHEELER

1874-1958

Born one of the first white children of Birmingham, Alabama, May 18, 1874, Harry Edgar Wheeler died there, March 11, 1958. His widow, Annie Lee Wheeler, and one daughter continue to make it their home; two other daughters and two sons have moved elsewhere. Mr. Wheeler's own residence in that city was by no means continuous.

He was of New England parentage—his father, from Massachusetts, had been a general in the Engineer's Corps of the Union Army; his mother was a Vermont school teacher. After early southern schooling, the seventeen-year-old Harry entered Lehigh University as a science major, but coming under Moravian influence, decided to study for the ministry. At the end of two years, in 1893, he enrolled in Southwestern University, then at Clarksville, Tennessee, later transferring to the Theological Division of Vanderbilt University. At the conclusion of his studies he was ordained as a Methodist minister in 1896 and assigned first to the Northern Alabama Conference and later to that of Arkansas.

During the Arkansas period, Mr. Wheeler's special concern was with young people on various college campuses and with younger groups such as the Boy Scouts and the Camp Fire Girls. This was to be a continuing life interest. In Arkansas, too, he was actively advancing his own scientific and historical hobbies which included ornithology, paleontology, and Indian Lore.

In 1924, he resigned his ministerial duties to join the staff of the Field, later Chicago Museum of Natural History. He was to hold several curatorial and directorial positions. In such manner he was associated with the Alabama Natural History Museum, the Birmingham Museum, the Arkansas State Museum of Little Rock, the Biological Laboratory of Highlands, North Carolina, the Cherokee Indian Museum, North Carolina, and finally, 1952-58, with the Indian Springs School, Helena, Alabama, near his Birmingham home. The fact that, in addition to whatever his official duties might be, he accomplished so much in the way of collecting, research, writing and speaking, was perhaps in part due to his long working days, from four in the morning to ten at night.

He had a ready pen. His articles on religious, scientific and historical subjects were published in appropriate journals or presented as papers at many of the society meetings he was accustomed to attend. Of his larger works, the Birds of Arkansas is a collector's item.

His own collecting in the Tertiary formations of Alabama sharpened his interest in another, earlier geologist who had preceded him there, Timothy Abbott Conrad. Extensive and exhaustive researches resulted in a 155-page illustrated account of Conrad which appeared in 1935 as no. 77, v. 33 of the Bulletins of American Paleontology. His interest in his subject continued and in 1955 at the last meeting of the American Malacological Union which he attended, he urged his listeners to be alert for hitherto unnoted Conradiana. Here spoke the bibliographer and collector of rare books of which his own library contained many fine examples.

The many organizations to which Mr. Wheeler belonged give evidence of his wide-ranging interests. Although he had had long acquaintance with the Paleontological Research Institution and its founder, Gilbert D. Harris, he did not become a member until 1955. The Institution accounts itself fortunate, however, in having even this all-too-brief association.

REBECCA S. HARRIS, *Secretary*
Paleontological Research Institution

Mr. Wheeler was a charter member of the American Malacological Union, attended many of the early annual meetings and served as a Councillor-at-Large in 1939-1940. M. C. T.

IN MEMORIAM

MRS. BLENN A. BALES
GEORGE D. BEATTY
MARIE E. BOURGEOIS
DR. PAUL R. BURCH
MRS. EUGENE H. SCHMECK
MRS. M. P. VAN WOERT
RAUL VASQUEZ
DR. HARRY E. WHEELER

ACTIVE MEMBERS

[Membership List Revised December 31, 1958]

Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.

Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.

Ahders, Catherine, 125 W. 76th St., New York 23, N. Y. East coast shells.

Ahern, Mrs. Thos. S., 8747 Brandt, Detroit 4, Mich.

Akers, Mrs. Frank G., Box 133, Naples, Florida.

Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.

Alexander, Mrs. Robt., 8542 Lemon Ave., La Mesa, Calif.

Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.

Allen, Dr. J. Frances, 9303 48th Place, College Park, Md.

Allen, Lester E., 187 Argyle St., Yarmouth, Nova Scotia.

Allen, Miss Letha S., 107 W. 29th St., Baltimore 18, Md. All shells.

Allison, Edwin C., Dept. Paleontology, U. of Calif., Berkeley 4, Calif. Fossil, recent and mega-micro marine invertebrates.

Ames, Margaret Dale, 17 East 89th St., New York City.

Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.

Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.

Anderson, Russell H., 2117 5th St., Alameda, Calif.

Arias, Sergio, Sociedad de Ciencias Naturales La Salle, Apartado 681, Caracas, Venezuela. All mollusks of neotropical regions.

Armstrong, Mrs. Eliot, 608 Lafayette Ave., Buffalo 22, N. Y.

Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y

Athearn, Herbert D., R.F.D. No. 5, Cleveland, Tenn. Fresh water mollusks.

Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. Land shells.

Atkinson, Mrs. Edw. W., 270 Orchard Lane, Columbus 14, Ohio. Atlantic coast marines; freshwater.

Atmus, Rudolph E., 239 Pease Rd., E. Longmeadow, Mass. Land snails, esp. *Polymita* and *Liguus.*

Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.

Averre, Mrs. Wm. V., Apt. Postal 709, Caracas, Venezuela.

Awald, Clifford J.,162 Southwood Dr., Kenmore, N. Y.

Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.

Baker, E. P., 11619 Downey Ave., Downey, Calif. Exch. Pacific Coast shells.

Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.

Baker, Fredric C., Box 291, Nampa, Idaho. *Chitons.*

Baker, Nelson W., Santa Barbara Museum of Nat. Hist., Santa Barbara, Calif. General interest.

Balch, Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.

Barbosa, Frederico Simões, Caixa Postal 459, Recife, Pernambuco, Brazil. Freshwater snails.

Bardwell, Mrs. Elizabeth, Box 1276, Rockport, Texas. Gulf Coast shells.

Barry, Charles, Sta. 16, Apra Hts., Agana, Guam. *Cypraea.*

Bartsch, Dr. Paul, Smithsonian Institution, U. S. National Museum, Washington 25, D.C. Residence, "Lebanon," Gunston Hall Rd., Lorton, Va.

Basch, Dr. Paul F., Museum of Zoology, U. of Mich., Ann Arbor, Mich. Freshwater pulmonates.

Bass, Mr. and Mrs. J. Louis, Jr., Medlin Heights Rd., Fountain City, Tenn. Murex and pectens.

Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. Exchange.
Bayer, Frederick M., Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.
Beaven, Dr. and Mrs. J. Mahlon, 175 W. Ridgewood Ave., Ridgewood, New Jersey. Amateurs; beautiful shells.
Beck, Mrs. R. G., El Patio Village, 4040 State St., Santa Barbara, Calif.
Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Bedell, Mrs. Adele Koto, 1421 Roosevelt Ave., Beloit, Wisc.
Bell, Miss Vashti, 528 South Erie, Wichita 16, Kansas.
Bengston, Mrs. George, 1802 Falls Ave., Waterloo, Iowa. Land, freshwater and fossils.
Bennett, Bob, Vinalhaven, Maine. Shells of Maine.
Bequaert, Dr. Joseph C., Biology Dept., Univ. of Houston, Houston, Texas.
Berg, Dr. Clifford O., New York College of Agriculture, Cornell Univ., Ithaca, N. Y.
Berger, Mr. and Mrs. John, "Tanglewood," R. R. 3, Angola, Indiana.
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Berson, Mrs. Hester J., 34 Broadway, Redwood City, Calif. Beginner.
Bippus, Alvin C., 2743 Sagamore Rd., Toledo 6, Ohio. Marine univalves.
Bissell, Mrs. Frances LaDue, 131 Morningside Dr., Milford, Conn.
Bixby, Mrs. H. M., Look See, Captiva, Florida.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Bolin, Velma and Bart, 6757 Lemoran, Rivera, Calif. West Coast marine gastropoda.
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Mrs. Margaret Carlson, 399 Washington St., Woburn, Mass.
Bradbury, Jack W., 2037 Miramar Drive, Balboa, Calif. Marine invertebrates.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Bradley, John C., 469 Farmington Ave., Waterbury 10, Conn. Travel and collect.
Brakefield, Gertrude E., 3830 7th St., N., St. Petersburg, Fla. *Melongena.*
Branson, Branley A., Dept. of Zool., Okla. State Univ., Stillwater, Okla. Southwestern gastropods and fishes.
Brewster, Miss Helen, 333 5th St., S., St. Petersburg 1, Fla.
Broekel, Ray, 324 Washington, Middleton, Conn. General collecting.
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Brown, Walter, 809 Virginia St., Pittsburgh 11, Pa.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Bruce, Anthony, 90 Doat St., Buffalo 11, N. Y. Printer.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Bryan, Edwin H., Jr., Bishop Museum, Honolulu 17, Hawaii. Pacific biogeography and biobibliography.
Burch, John Bayard, Div. of Mollusks, U. of Mich., Ann Arbor, Mich.
Burch, Mr. and Mrs. John Q., 1584 W. Vernon Ave., Los Angeles 62, Cal.
Burke, Mrs. Clara, 2121 So. Simpson St., Philadelphia 42, Penn. School collections.
Burton, Helen A., 391 Adams St., Oakland 10, Cal.
Butler, R. B., 171 Main St., Matawan, N. J. Marines, Recent and fossil.

Cabot, Robert. W., 1068 Main St., Stanford, Conn.
Caribbean Shell Shop, P.O. Box 311, Sarasota, Fla. Commercial and specimen shells.
Carlson, Mrs. Margaret F., 399 Washington St., Woburn, Mass.
Carpenter, Capt. Walter N., Box 15, A.P.O. 108, New York. General; exch.
Carr, Frank B., 12 Bull Mt. Rd., Asheville, N. Car. General interest.
Carriker, Dr. Melbourne R., Dept. of Zool., U. of N. C., Chapel Hill, N. Carolina. Morphology of drilling mechanism in gastropods; ecology.
Cartwright, Mrs. Jas. B., 4533 Park Ave., Memphis 17, Tenn. Atlantic and Gulf Coast shells.

Casey, Mrs. Robert. V., 1208 W. Big Bend, Kirkwood 22, Mo. Fla. W. coast shells.

Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Blvd., Los Angeles 49, Calfi. *Cypraea, voluta,* Japanese shells.

Chace, Mr. and Mrs. Emery P., 3446 Van Dyke Ave., San Diego 5, Calif.

Chamberlin, Dr. J. Lockwood, U. S. Fisheries Station, Millville, Delaware.

Champion, Dr. Merrill E., Museum of Comp. Zool., Cambridge 38, Mass.

Chandler, Mrs. Doris M., P.O. Box 621, Chatham, Mass. Winter: P.O. Box 3244, Ft. Myers Beach, Fla.

Chanley, Paul E., 46 Prospect St., Milford, Conn. Commercially important mollusks.

Cheever, Dr. Austin W., 464 Beacon St., Boston 15, Mass.

Chestnut, Dr. A. F., Inst. of Fisheries Research, Morehead City, N. C. Ecology of economic mollusks, taxonomy of pelecypods.

Chiaramonte, Michael P., P.O. Box 311, Shelter Is. Hts., N. Y. Marine life, high school curricula.

Chicoine, Martin J., 2013 New Hampshire Ave., NW, Washington 9, D. C.

Christensen, Carl, 408 Juniper Lane, Falls Church, Va. *Conus, Cypraea, Voluta.*

Church, Austin, Box 372, Trenton, Mich.

Ciarla, Otello, Rua Laurinda Santos Lobo, 311 Santa Theresa, Rio de Janeiro, Brazil.

Claar, Elmer A., Northfield, Ill. *Cypraea.*

Clarke, Arthur H., Jr., Dept. of Geology, Cornell University, Ithaca, N. Y. Sphaeridae; New England marine shells.

Clarke, Dr. Rosemary, Music Dept., Univ. of Dubuque, Dubuque, Iowa. *Liguus.*

Clench, Dr. William J., Museum of Comp. Zool., Cambridge 38, Mass. Collect, exchange, buy.

Coastal Bend Shell Club, c/o Sec'ty Magaw, 634 Pennington, Corpus Christi, Texas.

Coats, Miss Ruth E., 1828½ S. Hill St., Oceanside, Calif.

Coleman, Mrs. Nellie, 5308 3rd Ave., So., St. Petersburg, Fla.

Collins, Henry H., Jr., 1200 Post Road, Scarsdale, N. Y.

Conchological Club of So. Calif., c/o E. P. Baker, 11619 Downey Ave., Downey, Calif.

Conchological Section, Buffalo Soc. Nat. Sci., c/o Mrs. Howard Roeller, Eden, N. Y.

Conkling, Joseph E., Box 264, Edgartown, Mass. Winter, 628 4th Ave., S., St. Petersburg, Fla. Collect, buy, exchange.

Connecticut Shell Club, Peabody Museum, New Haven, Conn.

Corbett, Wm. Phelps, 2939 Nelson St., Ft. Myers, Fla. Exch. rare *Cypraea, Oliva, Murex.*

Cornell University Library, Ithaca, N. Y.

Corwin, Warren, Royal Palm Hammock, P.O. Goodland, Fla. Buy and sell shells.

Coulter, Chas. W., 79 Myrtle St., Brockton 6, Mass.

Cowles, Edward F., Jr., 12 Hillcrest Ave., New Rochelle, N. Y. Tropical marine shells; photography.

Craine, Mr. and Mrs. Z. W., 155 N. Broad St., Norwich, N. Y. Marines.

Crant, Harold, The Shell Factory, P.O. Box 1231, Ft. Myers, Fla.

Crum, Mrs. Dan, 930 N.E. 23rd St., Crest Haven, Pompano Beach, Florida. *Conus; Voluta.*

Cumming, James A., Sunset Dr., Grand Island, N. Y.

Cumming, Mrs. James A., Sr., Sunset Dr., Grand Island, N. Y.

Dafcik, Mr. and Mrs. Chas. J., Rt. 1, Box 364, Odenton, Md. Marine snails.

Darling, F. Murray, 3313 Achusnet Ave., New Bedford, Mass. Marine life.

D'Attilio, Anthony, 44 Lynwood Dr., Valley Stream, Long Is., N. Y.

Davis, Allan W., P. O. Box 338, Gulf Breeze (Pensacola), Fla. Dealer, private collection.

Dawley, Dr. Charlotte, The Women's College, University of N. C., Greensboro, N. C.

DeLuca, Miss Gladys, 16 Oakland Ave., Wollaston 70, Mass.

DeLuca, Mrs. John A., 16 Oakland Ave., Wollaston 70, Mass.
Derr, Mr. and Mrs. John S., Jr., Dearbought, Rt. 1, Frederick, Md.
Desmond, Hon. Thomas C., P. O. 670, Newburgh, N. Y.
DeStefano, Dr. and Mrs. Fredrick, 55 W. Elizabeth, Brownsville, Texas. Gulf of Mexico shells.
DeWitt, Robt. M., Biol. Dept., Univ. of Fla., Gainsville, Fla.
Dexter, Dr. Ralph W., Dept. of Biology, Kent State Univ., P. O. Box 507, Kent, Ohio.
Dietrich, Mr. and Mrs. Louis E., 301 Veri Ave., Pittsburgh 20, Pa. Mollusks of the West Indies.
Dodd, William E., M.D., Ocean St. and Bay Ave., Beach Haven, N. Y.
Dodge, Henry, 138 E. 80th St., New York City.
Dolen, Guy, c/o Frances Aycock, Apt. 101, 448 Riverside Dr., New York 27, N. Y. *Cypraea;* mollusks of Guam, Marianas.
Donahue, Mrs. Enid P., La Hacienda, Sanibel, Fla. "See L. F. Cockerill's shells!"
Donnelly, John F. and Katherine, 131 E. 26th St., Holland, Mich.
Donovan, James W., 3718 Calvin Ave., West Palm Beach, Fla.
Drake, Dr. Robt. J., Dept. of Zoology, Univ. of Arizona, Tucson, Ariz.
Dreibelbis, Edwin H., 311 N. Brown St., Titusville, Pa. Worldwide shells, starfish.
Duarte, Eliseo, Casilla Correo 1401, Central, Montevideo, Uruguay. Exch. shells and information.
Dundee, Dr. Dolores, 101 Hiawatha Blvd., Lake Hiawatha, N. J. Land mollusks, freshwater mussels.
Dunav, Edward, Shell Art Novelty Co., 229 S. 9th St., Philadelphia 7, Penn. Sell; buy; exchange.
Dunmire, Miss Peggy, 1116 W. 4th St., Port Angeles, Wash. Shell coll.
Dunn, Mr. and Mrs. Geo. E., 4727 27th Ave., So., Gulfport, Fla.
Dunn, V. Roger, 5021 18th Ave., So., Gulfport, Fla.
Dvorak, Stanley J., 3856 W. 26th St., Chicago 23, Ill. Rare west Atlantic Muricidae.

Eaton, Miss Ruth E., 3333 Orange St., Riverside, Cal.
Eddy, Anne-Elizabeth, 125 So. Harrison St., East Orange, N. J.
Eggleston, Dr. Harla Ray, Chairman, Dept. of Biol., Marietta College, Marietta, Ohio.
Emerson, Dr. Wm. K., Am. Museum of Nat. Hist., Central Park W. at 179 St., New York 24, N. Y.
Emery, Adele K., Box 1265, South Miami, Florida. Fla. E. coast marines.
Engberg, Norma J., 205 MacArthur Rd., Alexandria, Va. U. S. land and freshwater shells.
Erickson, Carl W., 4 Windsor Ave., Auburn Mass.
Eubanks, Mrs. Edwin W., 5108 Spring Glen Rd., Jacksonville 7, Fla. Florida marine shells.
Eyerdam, Walter J., 7531 19th Ave. N.E., Seattle 5, Wash.

Falconer, Bessie, 236½ Bailey St., Los Angeles 33, Cal.
Farrell, Mrs. Earl, P.O. Box 654, Des Moines, Wash. Amateur; exchange.
Field, Clyde L., 2534 "K" Ave., National City, Calif. *Voluta, Pecten, Murex, Spondylus.*
Fifield, Mrs. Barbara, 700 Tenth St., Coronado, Calif. General collecting.
Finlay, C. John, Varadero Beach, Cuba. West Indian marine shells.
Finley, Mrs. Ruth C., 4517 B St., Sacramento, Cal. *Conus;* exchange.
Fisler, John K., 3640 Harding, Carlsbad, Calif. General interest.
Fitch, John E., Calif. State Fish. Lab., Terminal Island, San Pedro, Cal.
Fletcher, Mr. and Mrs. Howard L., 1008 La Hermosa Dr., Redlands, Calif.
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Thomson, Miss Harriet W., 1895 Columbia St., Eugene, Ore. Marine fossils.
Thrane, Mrs. Rita J., 207 29th St., Hermosa Beach, Calif. Worldwide; exch.
Tobleman, Fred, 125 Franklin Ave., Ocean Grove, New Jersey.
Torre, Dr. Alfred de la, Apartado 56, Matanzas, Cuba.
Townley, Mrs. Netta Marie, Box 73, Kill Devil Hills, N. C. Virginia Zone mollusca.
Travers, Louise A., 22 E. 69th St., New York 21, N. Y. "Shell Découpage."
Tubbs, David O., Box 1590, Ft. Steilacoom, Washington.
Turner, Rev. G. Scott, Buies Creek, No. Car. Marine shells.
Turner, Dr. Ruth D., Museum of Comp. Zool., Cambridge 38, Mass.
Turver, Mr. and Mrs. H. R., 11672 No. 2nd St., Yucaipa, Calif.

Ucko, Paul, 731 West 183rd St., New York 33, N. Y.
University of Illinois Library, Urbana, Ill.
University of Maryland Library, College Park, Md.
Usticke, G., 1 North St., St. Croix, Virgin Islands.

Valentine, Kimball, 2300 Mathieson Bldg., Baltimore 2, Md. Dredging.
Valentine, Mrs. J. M., 1260 S.W. 1st St., Miami 35, Fla.
Van der Schalie, Dr. and Mrs. Henry, University Museums, Ann Arbor, Mich.
Van Felix, Mr. and Mrs. Henry, 104 18th St., Pass-a-Grill, Fla. Summer; Otisville, N. Y. General interest.
Van Woert, M. P., 1021 18th Ave., No., St. Petersburg 6, Fla.
Vasquez, Mrs. Raul, 629 Eaton St., Key West, Fla.
Vera, Eugenia (DDS), Ponce de Leon 1105, Apd. 731, Rio Piedras, Puerto Rico. Buy, exch. shells.
Vilas, Mrs. C. N., 53 W. Jackson Blvd., Chicago 4, Ill.
Vokes, Dr. Harold E., Dept. of Geology, Tulane Univ., New Orleans 18, La. Mesozoic and Tertiary mollusca, esp. pelecypoda.
Voss, Dr. Gilbert, 1 Rickenbacker Causeway, Miami 49, Fla.

Waldman, Mrs. Arthur, 212 Outlook, Youngstown, Ohio. Amateur.
Walter, Dr. Waldemar M., Dept. of Zool., State College of Washington, Pullman, Washington.
Walton, Munroe L., 1108 N. Central Ave., Glendale 2, Cal. Land snails.
Warmke, Germaine L., Federal Experiment Sta., Mayaguez, Puerto Rico.
Wasili, Mr. and Mrs. John, P. O. Box 113, Frisco, No. Car.
Watkins, T. Edward, All America Cables & Radio, Salinas, Guayas, Ecuador.
Wayne, Dr. Wm. J., Ind. Geol. Survey, Bloomington, Ind. Pleistocene non-marine mollusks.
Webb, Glen R., Box 335, Everman, Texas.
Webb, J. H., 1 Edgemore Dr., Rochester 18, N. Y. Collect, exchange Pectenidae.
Weber, Jay A., 1400 N.E. 108th St., Miami 38, Fla.
Weber, Misses Gertrude and Martha, 5230 Eleventh Ave., No., St. Petersburg, Fla.
Wehringer, Henry G., M.D., 5617 N. Knox Ave., Chicago 46, Ill.
Weingartner, Mathilde P., 17 Amelia Court, Staten Island 10, N. Y.
Welch, Dr. d'Alte A., John Carroll University, University Heights, Cleveland 18, Ohio.
Wells, Dr. and Mrs. Harry W., Box 162, Buxton, N. Car. E. Coast marines.
West, Larry Joe, 1926 Aurelius Rd., Holt, Mich. Land f.w. mollusks.
Wetzel, Mrs. Helen, 205 Pacific Ave., Tyrrell, Texas.
Weyrauch, Dr. Wolfgang, Avda. Petit. Thouars 1961, Lima, Peru. S. A. land shells.
Wheel, Adlai B., Pet Haven, West Seneca Turnpike, Syracuse, N. Y.
Whelchel, Mrs. A. T., 1735 McKenzie Ave., Fresno, Calif.
White, Wm. F. and Madeline, 181 Jules Dr., Staten Island 14, N. Y. Florida marine shells.
Whittemore, Mrs. A., 18 Vine St., Bronxville, N. Y.

Widmer, Ernest C., Box 4158, So. Daytona, Fla. Exch. marine and freshwater Florida material.

Wilcox, LeRoy, Oceanic Duck Farm, Speonk, L. I., N. Y.

Wilie, Wm. L., Jr., 1405 McFaddid, Beaumont, Texas. *Conus.*

Wilkins, Mrs. Jean, 8140 E. Phlox, Downey, Calif. Exchange and sell.

Williamson, Mrs. F. B., Jr., Windy Brook Farm, New Hope, Pa. (Oct.-May, 2 South, Pt. Sewell, Stuart, Fla.)

Wilmott, George B., West Hurley, N. Y.

Wilson, Druid, Room 404, U. S. National Museum, Washington 25, D. C.

Wisoff, Dr. and Mrs. Julius, 304 Beach 147th St., Neponsit, Long Island, N. Y.

Wistar, Miss Elizabeth M., 200 Montgomery Ave., Chestnut Hill, Philadelphia 18, Pa. Volutidae.

Woglum, Mr. and Mrs. R. S., 705 Arden Rd., Pasadena 5, Calif.

Wong, Dr. Chester, 308 Lincoln Ave., Takoma Park 12, Md. Medical malacology.

Wong, Dr. Lois Chi, 1216½ Tamarind Ave., Hollywood 38, Calif.

Wooster, Joel T., North Haven, Maine. Local species.

Wrigley, Rev. G. K., c/o Church House, Cross Roads P.O., Jamaica, B.W.I.

Wurtz, Charles B., 3247 Disston St. Philadelphia, Pa. Terrestrial Pulmonata

Young, Barbara P., 10 Old Lane, Scarsdale, N. Y. Tropical freshwater snails.

Young, Miss Catherine J., 1901 27th Ave., No., St. Petersburg, Fla. Pectinidae; Cymatiidae; Muricidae.

Zellers, Mrs. Lucille, 714 Elm St., El Cerrito 8, Calif. Gen. marine life.

Zetek, Dr. James, Director, Institute for Research in Tropical America, Drawer C, Balboa, Canal Zone. Coll. land and f. w. shells.

CORRESPONDING MEMBERS

Altena, Dr. C. O. van Regteren, Rikjsmuseum van Natuurlijke Historie, Leiden, Netherlands. Limacidae, Arionidae.

Carlos, Diomedes R., Carlos Dept. Store, Lucena, Quezon, Philippines.

Feen - van Benthem Jutting, Mrs. W. S. S. van der, Zoologish Museum, Plantage Middenlaan 53, Amsterdam, Netherlands.

Franco, Dr. Asela B., Ramos and Mango Avenues, Cebu City, Philippines.

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Grantier, Mrs. Bruce J., c/o Arabian-American Oil Co., Box 1545, Dhahran, Saudi Arabia. Persian Gulf shells.

Holloway, Miss Mavis M., 32 Pentland Ave., Mt. Eden, Auckland S. 2, New Zealand.

Malacological Society of Australia, 351 Glenferrie Rd., Malvern, Melbourne, Australia.

McMichael, Dr. Donald F., Australian Museum, Sydney, Australia.

Ministry of Agriculture, Fisheries & Food, Fisheries Lab., Burnham-on-Crouch, Essex, England. Oysters and their pests; Buccinum; Mytilus; Cardium.

National Museum of Victoria, Russell St., Melbourne, Australia.

Olivera, Baldomero, Jr., 22 Makilino, Cubao, Quezon City, Philippines. Philippine marine shells.

Oyama, Katura, Geol. Survey of Japan, Kawada-cho 8, P.O. Ichigaya, Tokyo, Japan. General malachology; phylogeny.

Pattison, George, 68 Partridge St., Glenelg, So. Australia.

Stevenson, A. G., Drury Hills Rd., Drury, S. Auckland, New Zealand.

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Annual Reports

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A. M. U., Twenty-sixth Annual Meeting

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THE AMERICAN MALACOLOGICAL UNION

TWENTY-FIFTH ANNUAL MEETING

JUNE 31 - JULY 3, 1959

On April 30, 1931 twenty-nine interested persons assembled at the Academy of Natural Sciences in Philadelphia for the purpose of forming an organization "For the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and cooperation among the members."

Twenty-five such meetings are now history. That science has been promoted and the interests of students and collectors furthered over the intervening years is borne out by the fact that attendance at the 1959 meeting was over four times that of the organization meeting, while membership has tripled with AMU members in each of the fifty states and in eleven foreign countries.

It was fitting, then, that the AMU return to its birthplace for this quarter-century meeting. It is inevitable that in such a span many changes will have taken place. Of those who attended the first meeting but seven are left, and all of them with the exception of Drs. Paul Bartsch and Horace G. Richards were present. Notable too is the fact that the late Henry A. Pilsbry was elected President and conducted that first meeting, while Dr. R. Tucker Abbott who occupies the Pilsbry Chair of Malacology was President on the recent occasion.

One hundred and thirty-three delegates enjoyed the hospitality of the Philadelphia Shell Club and the facilities of Haverford College on the western outskirts of the city. The quiet serenity of this Quaker college, the earliest of such institutions in the United States, is reflected in the campus with its centuries-old trees. Their welcome shade made more bearable the brief heat wave which ushered in the meeting.

With the first assembly scheduled for 2:00 P.M., Tuesday morning was reunion time as old friends arrived from every quarter of the country. Registration proceeded at a brisk pace under the able direction of Warner Over and Bob Wagner of the Philadelphia Shell Club, while Mrs. Bunny Baker performed the Herculean task of assigning each newcomer his or her room in the dormitory or issued directions to other lodgings nearby.

The assembly room was in Roberts Hall, and there in the early afternoon President Abbott called the twenty-fifth annual meeting to formal order, then welcomed his guests to Haverford and to Philadelphia. Haverford, said he, has known malacologists before this mass invasion. Dr. Joshua Baily together with his brother had been a student here just fifty years ago. Dr. Alan Solem is a more recent alumnus while Mr. Wesley M. Heilman is a member of the board of trustees.

He then introduced the president of Haverford College, Dr. Hugh Borton, who not only is a noted authority on Oriental literature, but as a member of the U. S. State Department had helped draft the Japanese Peace Treaty. Looking out over a number of fluttering fans, Dr. Borton voiced his regret that his welcome must be such a warm one! He said that he is sorry that none of the biologists on the Haverford faculty specialize in malacology, but that he himself had once explored the shell mounds on the outskirts of Tokyo, coming away with a few shell specimens and a deer's tooth. These mounds have now been pushed back into the city since they were in the way of an air raid shelter being constructed for the Imperial Palace.

He closed by repeating his welcome, and Dr. Abbott in response remarked that Dr. Pilsbry had been very active in monographing the mollusks of Japan, and had received recognition from the Emperor for his work.

PRESIDENTIAL REMARKS. R. Tucker Abbott, Academy of Natural Sciences, Philadelphia.

(Abstract)

Basic research in mollusks is in need of more active support. Although not a new problem nor unique to our field, the role and importance of basic research is not understood by many. In the field of malacology, it may be said that classification, anatomy and the study of life histories is basic research; testing for new snail poisons, for example, is applied research; and controlling disease-carrying snails is a form of industrial technology. Each type fulfills its role, each depends upon the other for survival.

Basic research in taxonomy has three fundamental requirements—competently trained people, large study collections, and an adequate library.

Basic mollusk research in our country is emanating from four quarters—the university museums, the government museums, the private academies, and the independent research workers. Each has its distinctive advantages, but also its own drawbacks. One of the most serious threats to basic research is the current tendency among certain institutions to obtain additional funds from grants or contracts for applied research or industrial technology.

Broad, steady continuation of basic research strengthens our national science and economy and maintains a valuable and active reserve of scientific brains. The common interests and combined efforts of amateurs and professionals have been largely responsible for the fifty percent rise in malacological positions in this country in the last fifteen years. Continued awareness of the problems and an accelerated effort on the part of all AMU members can keep our science alive.

SOME CONCHOLOGICAL MISCELLANIES. Joshua L. Baily, Jr., San Diego, California.

(Abstract)

Dr. Baily's talk was in the nature of a very informal welcome to the campus of the college at which he matriculated as a freshman just fifty years ago. Since this was the first time that the AMU has met at a Quaker College he spoke about some of the Quakers who have made malacological contributions in the past.

The first of these was Martha Braithwaite, a teacher in the Friends School at Holquin, Oriente Province, Cuba, whose interest came about as the result of her surprise when she first saw specimens of *Polymita* and *Liguus*. Eventually she assembled quite a large collection which she gave to Haverford.

The other conchologists mentioned by Dr. Baily are so well known as such that he emphasized principally their extra-conchological activities. He spoke about Thomas Say and the psychic experiences of his grandfather; of Isaac Lea and his association with Edgar Allen Poe; of Isaac Israel Hayes and his polar explorations; of Edgar Drinker Cope and the Port Kennedy cave; of George W. Tryon and the grand opera which he composed and produced in Philadelphia; of Lewis Weston Dillwyn and his father's anti-slavery activities; of Sir John Parkinson, who was not only a conchologist but also a surgeon, an artist and a botanist, and guardian of a low-grade moron; of Daniel Wheeler, who at the request of the Czar went to St. Petersburg to drain a swamp in which a pestilence was brewing, subsequently becoming a missionary to the islands of the South Pacific, eventually returning to the United States and making an address before the student body at Haverford.

Dr. Baily also mentioned by name a few other conchologists, some of whom came from a Friendly background, but concerning whose actual membership there is reasonable doubt. Among these were Timothy Abbott Conrad, William Dell Hartman, William Harper Pease and Andrew Garrett. Also Raistrick, in his "Quakers in Science and Industry" states that Carolus Linnaeus was a Friend at heart although he never joined meeting.

Abbott: "The early Quakers had great influence hereabouts. It is interesting to hear some of the little-known facts about our malacological predecessors."

IN SEARCH OF NEOPILINA. Arthur H. Clarke, Jr., Lamonte Geological Observatory, New York.

(Abstract)

On October 17, 1958, Columbia University's research vessel VEMA left Hoboken, New Jersey for oceanographic explorations off South America and Africa. A violent four-day storm off Cape Hatteras damaged several ships in the area including the VEMA and repairs were made at Savannah.

The vessel then proceeded through the Windward Passage, the Caribbean Sea, and the Panama Canal, stopping frequently for oceanographic measurements and samples, including deep sea dredging. Ten apparently unsuccessful hauls were made off Costa Rica near the type locality of *Neopilina galatheae*,[1] but subsequent sorting revealed that one small *N. galatheae* had been collected. Travelling south across the Cocos Rise more dredgings were made, and at four stations in the Milne-Edwards Trench off northern and central Peru (3068 to 3458 fathoms) ten specimens of a new subgenus and species of *Neopilina*[2] were found.

Examination of the specimens on board ship and later, and evaluation of data, has produced new information. It may be partially summarized as follows:

(1) Living monoplacophorans occur near the tropical West Coast of the Americas in the abyssal zone of the Northern Hemisphere (*N.* (*N.*) *galatheae)* and in the abyssal and hadal zones of the Southern Hemisphere *(N. (V.)ewingi)*.

(2) Relatively abundant food and rich benthic communities occur in both neopilina areas. Dominant organisms in each locality include bivalves (mostly protobranchs), polychaetes, and amphipods.

(3) Fresh specimens and undersea photographs show that modern monoplacophorans live on the surface of the ooze with the apex uppermost. Movement is facilitated by the production of a mucous secretion which covers the foot. Gastropod-like trails are made in the ooze.

(4) Modern monoplacophorans are detritus feeders. Diatom, radiolarian and pelagic foraminiferan tests are found in the feces.

(5) The occurrence of living Monoplacophora suggests that favorable environmental conditions have prevailed in these trenches for a long period and that other archaic types may exist in these regions.

[1] H. Lemche, *Nature 179*:413 (1957).

[2] *Neopilina (Vema) ewingi* Clarke and Menzies, *Science 129*:1026 (April 17, 1959).

This paper was accompanied by a series of slides showing the ship and crew, the dredge in action, *Neopilina ewingi* itself and finally pictures of the ocean bottom taken by submarine camera and depicting what Dr. Clarke is inclined to believe are tracks of the living-fossil mollusk.

ORIGIN OF THE LAND AND FRESHWATER MOLLUSKS OF THE BAHAMAS.

William J. Clench, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

(Abstract)

So far as our geologic record is concerned, the Bahama Islands were covered with oceanic water during the Pliocene or early Pleistocene. Since then, these islands have never been a part of any other land area but have been isolated by water from other land areas and in several instances from each other. Daly holds that during maximum glaciation in North America and Europe, the eustatic change in oceanic level was lowered as much as 250 feet below the present sea level. At that time, the Bahamas consisted of two large islands (Great and Little Bahama Banks) and several small islands.

At the time of lower eustatic level, vast areas of sand were exposed and sand dunes came into being. These eventually were built high enough to form the islands of the Bahama group. Subsequent erosion and a positive eustatic change of oceanic level have fragmented these islands as we see them today.

Very probably many of the land mollusks reached the Bahamas at the time the larger islands existed and others long after when the banks were again flooded and only the higher portions remained above water.

The present fauna and flora of the Bahamas must have reached these islands by some mechanical method. The most effective has been the numerous hurricanes which could account for many plants distributed by wind-blown seeds, insects, mollusks and other small invertebrates. Many plants and probably larger animals, could have reached many of the Bahama Islands by rafting.

Torrential rains in Cuba and Hispaniola, as well as elsewhere in the tropical Americas, flood the rivers and streams with masses of vegetation. Many of these "floating islands" reach the sea and are carried away by currents. Many, of course, break up and disappear; others last long enough to reach some distant shore. Royal palms and other debris are frequently washed ashore on Great Inagua and probably on many other islands in the Bahamas. Such rafts could carry small animals and it is possible that certain plants could survive such a journey.

Modern man has definitely added to the fauna and flora of the islands and it is very possible that primitive man carried both plants and animals from one island to another.

In general, island proximity and not island connections, show molluscan relationships. That is, islands which are fairly close to each other, regardless of the depth of water between them, are closer in their relationship regarding their land mollusks than more distant islands which are separated by very shallow seas.

This would point to a mechanical means as a distributional factor and not to any remote geological connection between these island groups.

A map of the Caribbean illustrated this paper.

Morrison: "Does the number of species have a direct relationship to the comparative size of the land?" Clench: "Yes, the smallest islands have the smallest faunal lists." Abbott: "Cuba is smaller than Hispaniola, also further away." Clench: "Remember that Cuba was under water 100,000 years ago." Sibley: "Are there unios in the Bahamas?" Clench: "No." Grimm: "How about gill-bearing gastropods — couldn't they have been transported by the wind?" Clench: "Yes, and often are."

CLASSIFICATION IN THE OLIVIDAE. John Q. Burch, Los Angeles, California.

(Abstract)

The genetic organization of many species of the Olividae permit an almost incredible variation in color, and to some extent in form as well. The result has been the creation of a very large synonymy for many species. The tendency of some recent authors to describe a new genus to

contain certain variations compounds the problem. It is often stated that systematic zoology is a language of science. If this be true, it should follow that the system establish a means of communication. To that end are many generic names more useful than fewer broad genera with subgenera and sections?

The burden of proof should definitely be upon the author who wishes to replace a systematic name established in the literature by generations of usage, and particularly if such change is based upon a belated recognition of an old pre-Linnean wood cut that has been thought unrecognizable by over two centuries of scholarly workers.

Clench: "No one has to observe priority if it can be proven that a mistake has been made. Too, if the old name is not mentioned in fifty years it may be thrown out." Morrison: "Two hundred years would be better—I do not agree with fifty." Abbott: "What constitutes usage?" Clench: "Mention—but the rule should be more flexible." Turner: "I think that this rule refers to old books, not monographs." Palmer: "Remember we have an international commission to rule on nomenclature; I think we should use it more, especially when dealing with critical genera." Abbott: "The olives also bring up the old problem, to lump or to split."

In introducing the next paper, Dr. Abbott explained that Mr. Foster had built up the Museum of Comparative Zoölogy's collection of cephalopoda.

THE STRANGE PHENOMENON OF AUTOTOMY IN TREMOCTOPUS. Richard W. Foster, Museum of Comparative Zoölogy.

Drawings and alcoholic specimens illustrated this paper.

This paper completed the opening day session; the Executive Council held its once-a-year meeting following dinner while those not so engaged sought to forget the heat which later in the evening was tempered by a merciful thunderstorm.

The program on Wednesday featured an innovation insofar as the AMU is concerned, dual sessions. Since this was the largest meeting in AMU history with a correspondingly larger number of papers to be heard in the same length of time as former meetings, they had been divided on a popular vs. scientific basis and were read simultaneously in two halls.

In the morning President Abbott presided over the popular session while Vice-President Katherine Palmer wielded the imaginary gavel over the scientific session in the Chemistry Hall. In the afternoon they changed halls and audiences, although the audiences tended to be somewhat fluid as persons scurried from one hall to the other to catch a paper whose title sounded more enticing. The following papers are listed in the approximate order in which they were presented.

SOME TECHNIQUES FOR ANATOMICAL WORK. Ruth D. Turner, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

The following notes concern a new preservative and some easily used, inexpensive procedures which require no highly technical skills or long, involved procedures.

PROPYLENE PHENOXETOL, A RELAXING AND PRESERVATIVE AGENT

Owen, G. 1955, Use of Propylene phenoxetol as a relaxing agent. Nature *175,* p. 434.

Owen, G. and H. F. Steedman 1956, Preservation of animal tissues with a note on staining solutions. Quarterly Journal of Microscopical Science *97,* pp. 319-321.

Owen, G. and H. F. Steedman 1958, Preservation of Molluscs. Proceedings Malacological Society London *33,* pp. 101-103.

1. This is relaxing and preserving agent, not a fixative. All specimens must first be fixed in formalin or alcohol.
2. Keeps tissue soft and does not change color.
3. As a preservative it reduces the evaporation problem to a minimum.
4. As a relaxing agent it seems to be most successful for small bivalves and shell-less mollusks. It is particularly useful if one wishes to relax marine or freshwater mollusks for study purposes without killing. The specimen will revive if replaced in fresh well aerated water.
5. The following formula is one which has proven useful for mollusks: Water—86 parts, Glycerol—10, Propylene phenoxetol—1, 95% alcohol —3. The alcohol aids in the emulsification of the mixture and the glycerol aids in keeping the tissues softer. The glycerol is not necessary and water may be used in its place.
6. Propylene phenoxetol is manufactured by the Nipa Laboratories Ltd., Traforest Industrial Estate, Pontypridd, Glam., Wales. The London office is Nipa Laboratories Ltd., Roman Wall House, 1 Crutched Friars, London E C 3, England. It may be obtained in this country from:

   Goldschmidt Chemical Corporation
   153 Waverly Place
   New York 14, New York
7. Price—$10.00 per pound F.O.B. New York. This amount makes about 20 liters or 25 quarts.

TRISODIUM PHOSPHATE FOR RECLAIMING HARDENED OR DRIED SPECIMENS

Van Cleave, H. and J. Ross 1947, A Method of Reclaiming Dried Zoological Specimens. Science *105,* p. 318.

1. May be used for softening and making pliable specimens that have been preserved in alcohol that was too strong or that, because of very long preservation, have become brittle.
2. May be used on specimens which have been dried or from which the alcohol has evaporated.
3. Does not work well on specimens that have been preserved in formalin.
4. A solution of 8 grams per 100 cc of water has proven effective for mollusks.
5. Soak specimen overnight or for as long as necessary.
6. It is very cheap and may be obtained from any chemical supply house.

POLYVINYL MOUNTING MEDIUM

Salomon, J. T. 1949, New Methods in Microscopy for the Study of Small Insects and Arthropods. (Report of the 6th New Zealand Science Congress). Transactions Royal Society of New Zealand 77, pp. 250-253.

1. Useful for radula studies. No stain is necessary. Can mount directly from 70% alcohol.
2. The surface film develops slowly so there is a long working period and it is possible to study and arrange material at leisure before putting on the cover slip.
3. It has a clearing action and may be useful for some anatomical mounts. One disadvantage—clearing may progress too far.
4. It is acid, so if staining acid stains must be used.
5. There may be some trouble with bubbles, but this can often be taken care of by letting the bubbles work out before putting on cover slip.
6. Ring with Duco cement or clear fingernail polish.
7. Formula for type MA2—found useful for radula:
    2.5 grams polyvinyl alcohol, medium viscosity.
    25 cc distilled water.
    30 cc lactophenol solution (made from equal parts of lactic acid and phem).
    Mix all together and stir. This will produce a viscous mixture full of bubbles. Place on warm radiator overnight to clear. Let stand 2 to 3 weeks before using.

CMC-10, A NON RESINOUS MOUNTING MEDIUM

Turtox—CMC-10 Technique Bulletin.
Michelson, Edward (in press).

1. A quick, easy method for making whole mounts of anatomical preparations. Can mount directly from water or low concentration of alcohol. Water is recommended by Michelson.
2. All clearing is completed in about 4 hours.
3. Color of various organs does not change so that for general morphological studies staining is not necessary.
4. The medium thickens and becomes spongy rather slowly so that there is a long working period for studying and arranging dissection or radula.
5. It is possible to demount and restudy the material if desired. Remove the cover slip and place in dish of water to soften.
6. It is slightly acid.
7. Cannot be used with preparations that require a stain.
8. When mounting large specimens there may be some trouble with bubbles but this can usually be taken care of by not putting on the cover slip until the bubbles have worked out.
9. Ring finished slide with Duco cement or clear fingernail polish.
10. May be obtained from Turtox Products, General Biological Supply House, 8200 South Hoyne Avenue, Chicago 20, Illinois.
11. Price: 1 oz.—$0.50; 4 oz.—$1.75; 1 lb.—$6.00.

MOUNTING CELLS

Inexpensive mounting cells to take square cover glasses can be made from narrow strips of clear sheet plastic (such as is used for tops of card boxes, etc.) built up to the desired height and sealed at the corners and on the outside with Duco cement.

SANIBEL ISLAND SHELL FAIR. Lulu B. Seikman, St. Petersburg, Florida.

Mrs. Seikman reviewed this annual event, illustrating her words by a series of slides which depicted the various attractive exhibits which included arrangements of shells and living mollusks in aquaria. Interesting also were several views of birds in their rookeries since not too many people are aware that besides being famed for its shells, Sanibel Island is also a bird sanctuary. She concluded by reading the poem which has become semi-classical in malacological circles, "Sanibel Bend."

MARINE ZOOGEOGRAPHY, WITH SPECIAL REFERENCE TO THE SOUTH PACIFIC AREA. Harald A. Rehder, U. S. National Museum, Washington, D. C.

(Abstract)

This paper, in an amended form, will be published in a forthcoming issue of the Nautilus.

The numerous marine zoogeographic provinces that have been proposed are arranged under two primary realms, the *Cryeric Realm* (cold-water faunas) and the *Tropical Realm* (warm-water faunas). The first is divided into the *Septentrional Region,* comprising the cold and temperate waters of the northern hemisphere, and the *Meridional Region,* covering those of the southern hemisphere. The Septentrional Region is divided into three subregions, and the Meridional into five subregions.

The *Tropical Realm* consists of two regions, the *West-Tethyan Region,* comprising the *East Atlantic,* the *West Atlantic,* and the *East Pacific Tropical Subregions,* and the *Indo-Pacific Region,* consisting of the *Indian, West Pacific, Central Pacific,* and *Australo-Neozelanic Subregions.*

The Indo-Pacific region, because of the numerous, widely scattered gaps in our knowledge of its fauna, is the least settled as far as the subregional and provincial boundaries are concerned, and further collecting, and more critical analysis of material available from this vast area, will without doubt lead to many changes in our knowledge and concept of its zoogeography.

SMALL BEGINNINGS. Adlai B. Wheel, Syracuse, New York.

Well known for his "anti-delinquent" work with the 3800 members of the Syracuse Boys Club, Mr. Wheel is likewise no stranger to AMU members. For many years he has appeared before them at annual meetings, bringing news of his boys and their small museum and always a plea for understanding and patience when dealing with youth. "Make him understand," Mr. Wheel concluded, "That no matter how humble a boy's position, more is possible if he'll really try."

EARLY PHILADELPHIA CONCHOLOGISTS. John Dyas Parker, Philadelphia.

Mr. Parker left his listeners aware that a close examination of the labels in the ANSP shell collection would tie in closely not only with local history but with that of the United States.

EGG MASS AND GROSS EMBRYOLOGY OF *PLEUROCERA CANALICULATUM* (Say, 1811). Joseph Rosewater, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

(Abstract)

The Pleuroceridae have been considered quite cryptic as regards their reproductive habits. Stimpson[1] was the first to indicate external sex differences between male and female pleurocerids: the latter having a groove and sinus on the right side of the neck; the former lacking these structures. Thiele[2] included the Pleuroceridae in the superfamily Cerithiacea, the members of which have radulae and shells similar in some details, and whose male members lack a penis. For nearly 150 years after the description of the first species, *Goniobasis virginica* (Gmelin, 1791), nothing was known concerning the egg laying habits of the group. Through the work of Jewell[3], van Cleave[4, 5], Winsor[6], and Woodard[7, 8, 9] the egg masses (and in one case the gross embryology) of 7 species representing 4 genera of pleurocerids were made known.

Through the kindness of H. D. Athearn, Cleveland, Tennessee, 2 lots of live *Pleurocera canaliculatum* were collected in early May, 1959, from North and South Chickamauga Creeks, tributaries of the Tennessee R. near Chattanooga and sent to me for observation. These were maintained in well aerated aquaria and fed boiled, chopped spinach. Within two days the females began ovipositing on the glass aquarium walls. The egg masses are similar to those described by van Cleave[4] for *Pleurocera acutum* and *P. acutum lewisii,* by Winsor[6] for *Goniobasis virginica,* and by Woodard[7] for *G. laqueata.* The mass is circular to oval in outline, plano-convex in silhouette, and measures from 1-1.7mm. in diameter. The number of eggs ranges from 3-13, averaging about 9. Individual eggs are about 0.3mm. in diameter; they are incased in spherical capsules which are imbedded in a gelatious matrix. Eggs vary in color from pink to grayish white with occasional masses being bluish green. The matrix and capsules are clear and the eggs comparatively large and are ideal for purposes of observation. The masses may or may not be covered with sand grains apparently depending upon whether or not the latter are available at the time of oviposition. In the absence of sand grains detritus was incorporated into the masses. Oviposition was not observed in its entirety but appears similar to that described by van Cleave[4] for *P. acutum lewisii.*

The following "time table" indicates the more outstanding events during the development of *P. canaliculatum:*

Day *Observed*

1 — 4-8 cells.
2 — early blastula (32-64 cells).
5 — trochophore (revolving).
6 — preveliger ("blister").
9 — veliger.
10 — velum larger;
heart beating;
first movements in foot.
12 — velum reduced;
much movement of foot and velum;
pallial current dorsally;
torsion probably 10-12th day.
13 — velum cast off;
tentacles with eyes at bases;
proboscis with lips;
active pallial current;
active movement of animal;
shell about 1 whorl.
15 — hatching;
crawling about;
periostracum colored;
feeding on algae? (radula moves).

Shells of developing and newly hatched *P. canaliculatum* resemble the figures by Jewell[3], and Winsor[6], and those of young prosobranchs generally (see Thorson[10]). But when, after hatching, a size of $1\frac{1}{4}$-$1\frac{1}{2}$ whorls was attained a keel was developed on the periphery of the whorl which gave the aperature a rhomboidal outline characteristic of the genus *Pleurocera.*

Based on similarities in reproductive anatomy and egg mass characteristics, Morrison[11, 12] combined the gerera *Pleurocera* and *Goniobasis* and included *Goniobasis livescens* with *Leptoxis carinata* in the genus (subgenus?) ***Mudalia.*** It is my belief, on the basis of new material presented here and as a result of a different interpretation of the known facts concerning pleurocerid reproductive habits, that five categories of the latter exist. (1) *G. livescens* lays small eggs singly or in lines of 2-3; spermatophores are present; (2) *Leptoxis (Mudalia) carinata* lays larger single eggs in fairly large series; no spermatophores have been found in this species; (3) *G. laqueata* lays a compound egg mass averaging 7 eggs, and spermatophores are present *(G. virginica* may possibly be included in this category as its egg mass is similar to that of *laqueata;* no spermatophores have been found as yet in *virginica);* (4) *Pleurocera acutum,* its subspecies *lewisii,* and *P. canaliculatum* also lay compound egg masses; no spermatophores were noted in these species; (5) *Lithasia venusta* was reported by Woodard[7] to lay a spiral ribbon of eggs reaching an inch in diameter. The single eggs, categories (1) and (2), are laid by species usually inhabiting, respectively: lakes and lake tributaries; and head streams and swift portions of rivers. Compound egg masses, categories (3) and (4) seem characteristic of the species which inhabit the larger rivers. Category (5) seems distinct and easily separable from the other four. L. Hubricht[13] stated that G. *laqueata,* in a cave habitat deviated from laying its usual compound mass, producing single eggs. This and the other evidence suggests that, at least in the first 4 categories, egg laying behavior in pleurocerids is in part correlated with the ecologic niche in which a species is found. It is not known whether certain egg laying habits are controlled by selective forces or whether the individual controls them. It seems apparent that single eggs may have survival value in swift water habitats or certain lakes while compound masses are of value or are, at least, not selected against in large, slow flowing rivers. Reproductive habits of many more species of pleurocerids must be studied before it is certain that they represent good taxonomic characters rather than merely reflecting environmentally controlled selection.

[1] American Journ. Sci., 38:41-53 (1864).
[2] Handb. syst. Weichtierkunde, 1:188-202 (1929).
[3] Nautilus, 44:115-119 (1931).
[4] Nautilus, 46:29-34 (1932).
[5] Nautilus, 47:48, 49 (1933).
[6] Journ. Washington Acad. Sci., 23:34-36 (1933).
[7] Journ. Tennessee Acad. Sci., 9:243-259 (1934).
[8] Journ. Morph., 57:1-29 (1935).
[9] Journ. Exp. Zool., 85:103-125 (1940).
[10] Meddelelser Komm. Danmarks Fiskeri-og Havundersgelser, ser.: Plankton, 4:162-245 (1946).
[11] American Malacol. Union Bull., No. 18, pp. 6-8 (1951).
[11] American Malacol. Union Bull., 1951, pp. 6-8 (1952).
[12] Proc. U. S. Nat'l. Mus., 103:357-394 (1954).
[13] Personal Communication, July, 1959.

Wurtz: "Is the spermatophore attached to the substrate, or how are the eggs fertilized?" Rosewater: "It is not definitely known how fertilization is accomplished. Woodward thought spermatophores might break down within the genital sinus and from there be transferred retrograde to the seminal receptacle. I think it is possible that the spermatophores may break down releasing sperm into the water. From there they may be drawn to the region of the seminal receptacle via the pallial respiratory current. Van der Schalie: "Have you been successful in culturing *Pleurocera* in the laboratory?" Rosewater: "With proper conditions adults live several months or longer, but so far the young survive only a few weeks after hatching."

UNEARTHING GOULD'S TYPES.

Richard I. Johnson, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

(Abstract)

The essential biographical details of Dr. Gould's life were briefly reviewed, but since they were presented more fully at the 1955 meeting of the AMU at Staten Island, we hesitate to repeat them in abstract for the second time, but will content ourself here with a summary of the tentative results of our search for Gould types at the United States National Museum (USNM), the Museum of Comparative Zoölogy (MCZ), and in the so-called "Gould Type Collection" now on permanent loan in the MCZ from the New York State Museum at Albany (NYSM).

- United States Exploring Expedition, 1838-42.
    - 444 new species were described.
        - 307 found in USNM.
        - 27 found in MCZ or NYSM, not in USNM.
        - 110 not found, no record.
- North Pacific Exploring Expedition, 1853-56.
    - 374 new species were described.
        - 223 found in USNM.
        - 36 catalogued in USNM, but not found.
        - 23 found in MCZ or NYSM, not in USNM.
        - 92 not found, no record.
- All other sources, 1839-70.
    - 271 new species were described.
        - 179 found in MCZ or NYSM.
        - 102 not found, no record.

At the time of this writing, we have type material representing 748 of the 1089 described species. Of the 340 species which have not been located, 77 were without shells. These were probably lost many years ago, if indeed, they were preserved at all beyond the time necessary to prepare sketches. It is hoped that a study of the P. P. Carpenter collection in Montreal will reveal a few more types that may be included in the report before publication.

OBSERVATIONS OF *MUREX STAINFORTHI* AND *M. MONODON*.

Virginia Orr, Academy of Natural Sciences, Philadelphia.

(Abstract)

Because many descriptions of *Murex* species emphasize variable shell characters such as size, color, shape of fronds, number of varices, the limits of variation of these characters within a species should be determined whenever possible.

An expedition to Broome, Western Australia, for the Academy of Natural Sciences of Philadelphia and the Natural Science Foundation, produced enough *Murex (Chicoreus) monodon* Sowerby 1925 from one station to do a statistical study of the length, size of aperture and relative height of the spire to length. *Murex (Hexaplex) stainforthi* Reeve 1843 was found in numbers at many stations providing material for a similar study and some interesting observations on color and food.

Thirty *Murex monodon* were taken at Black Ledge, just south of Broome. They were wedged tightly under muddy rock ledges just above spring low tide. Shells varied in length from 71 to 110 mm. Females were larger (95 mm. average) than males (80 mm. average). The area of the aperture was proportionately larger in big shells but the relative height of the spire varied with individuals and could not be correlated with size or sex. The height of the spire could be contained in the length of the shell 2.4 to 3.1 times.

Considerable individual variation was found in the length and shape of the fronds. Some were slender, others palmate, some curved over the back while others were scarcely recurved but none of the Broome shells nor any examined from the Academy's collection were branched or forked at the tip. This eliminates *M. cornucervi* Perry 1811 as an earlier name for *monodon* Sowerby. The fronds of Perry's shell forked at the tip.

The 142 *Murex stainforthi* studied came from two bay and two ocean stations in the Broome area. The bay shells were usually partly buried in muddy gravel and shell between rocks while the ocean station shells were more often seen clinging to the sides and in cracks of rock. The species was commonest between neap low tide mark and spring low tide (a zone of 10 vertical feet). Both ecologic situation and sex affected the size of *stainforthi,* which ranged from 28 to 65 mm. Shells from the ocean stations averaged 11 mm. larger and tended to have more and thicker varices than those from the bay stations. As in *monodon,* female *stainforthi* averaged larger (46 mm.) than males (42 mm.) and large shells had proportionately larger apertures. The height of the spire could be contained in the length of the shell 2.3 to 3.6 times.

Although the aperture of *M. stainforthi* is usually orange or whitish, 68% of the shells at one station where the bivalve *Septifer* was a principal food had deep rose apertures. Less than 5% had rosy apertures at other stations where *Septifer* was rather scarce. This suggests further interesting studies on the effect of food on color.

MECHANICS OF A SHELL CLUB. Robert J. L. Wagner, Philadelphia Shell Club.

(Abstract)

Organizing any sort of club on any but a hit-or-miss basis calls for study, planning, some knowledge of the subject to which the organization is dedicated and an understanding of the type of person likely to be attracted to such a group.

Organizing a shell club is one thing, to retain members and keep them attending meetings is something else again. This paper is in the nature of a report of the study made by the Philadelphia Shell Club on this and other related problems.

A survey was made to determine why members had joined in the first place. Since the reasons varied from curiosity to lasting dedicated interest, several types of memberships were set up to accommodate all classes. These range from Junior through Corresponding to Regular, with Life and Honorary memberships a future possibility.

Programs must be varied so that all elements of membership may be interested; talks with or without accompanying slides or movies; swap and auction nights; question and answer sessions; identification meetings; instruction on cleaning, cataloging and storing shells; dredging; field trips —all these have a place in the well-balanced annual program.

The cost of operating a shell club calls for serious study since allowance must be made for such things as rental of meeting places and projection equipment, stationery and stamps; reimbursement to guest speakers, cost of printing or otherwise preparing periodic reports—these and many more unforeseen drains upon the club treasury must be anticipated. Adjusting the annual dues to the operational needs of the club so as to avoid either deficit or surplus is a real economic problem.

These, then, are the conclusions arrived at by those making a study of the problems of the Philadelphia Shell Club: (1) Talks *with* slides or movies bring out 35% to 65% of the membership. (2) "Swap nights" attract 25% to 45%, especially juniors and beginners. (3) Talks by *well known* speakers will entice 20% to 40%. (4) Donation auctions resulted in a 20% to 25% attendance. (5) Donation auctions *are necessary* to supplement the treasury. (6) Programs must be varied to suit all types of members. (7) Members want some tangible evidence to show that they "belong." Wallet cards to certificates suitable for framing have been found acceptable. (8) A report in the form of a pamphlet or booklet listing officers, club events, etc. and suitable for incorporating into members' private libraries is definitely desirable.

Many new ideas are to be investigated during the coming season, including issuing lists of good collecting spots, serious study with achievement awards and more "Shell-of-the-Month" reports.

CHROMOSOMES OF POMATIOPIS AND ONCOMELANIA. John B. Burch, University of Michigan Museum of Zoology.

(Abstract)

Cytological studies have been extended to the operculate genera *Oncomelania* and *Pomatiopsis.* The cells of the four species of *Oncomelania (O. nosophora, O. hupensis, O. formosana,* and *O. quadrasi)* studied all have seventeen elements present as seen at late prophase and metaphase of the first meiotic division of spermatogenesis. This number of elements is also present at these stages in spermatogenesis of the closely related North American *Pomatiopsis lapidaria* and *P. cincinnatiensis.*

Oögonial cells of both *Oncomelania nosophora* and *O. quadrasi* have thirty-four chromosomes. Spermatogonial cells of these two species have not been examined. Spermatogonial cells of *Pomatiopsis lapidaria* have thirty-three chromosomes, sixteen pairs and a heterochromatic chromosome, presumably a sex chromosome. Spermatogonial cells of *P. cincinnatiensis* have only thirty-two chromosomes, fifteen pairs plus a heteromorphic pair. The chromosomes of the latter pair are the largest of the complement. One is medianly constricted, the other, which sometimes appears to be heterochromatic, is subterminally constricted. Since seventeen elements are seen in cells of the first meiotic division, these cells apparently contain two univalents, perhaps the heteromorphic chromosomes.

(This paper was illustrated with photomicrograph transparencies.)

Wurtz: "What did you use to stain your slides?" Burch: "Mainly acetic-orcein; a few slides, the lighter stained ones, were prepared with aceto-carmine. The fixative used was Newcomers' and the photographs were taken with a 20X ocular, oil immersion objective, and green filter." Rosewater: "Woodward did not find any heterochromosomes in *Goniobasis laqueata.*" Burch: "No, but it is doubtful whether he would have been able to distinguish them had they been present because of the techniques used." Abbott: "Do your chromosome studies show any evidence for combining the species of *Oncomelania* and *Pomatiopsis* under one genus and calling them all

Pomatiopsis?" Burch: "I have no negative evidence for such a change. Perhaps as positive evidence is the seventeen elements found in first meiotic metaphase of *P. lapidaria* and the four species of *Oncomelaria.* Paper chromatographic studies in our lab have shown *Oncomelania quadrasi, O. nosophora, Pomatiopsis lapidaria* and *P. cincinnatiensis* to be very similar, and that the two *Oncomelania* species are more alike than the two *Pomatiopsis* species."

EXPEDITION TO THE PHILIPPINES. John du Pont, Delaware Natural History Museum.

This interesting talk, illustrated by color movies and slides, was an account of the collecting expedition undertaken in 1958 by Mr. du Pont and Dr. and Mrs. R. Tucker Abbott. Object: addition of mollusks to the ANSP collection. That the mission was successful is attested by the disclosure by Mr. du Pont that over three tons of shells were brought back and that to properly sort and classify them all would take one person a lifetime.

QUANTITIVE SAMPLING OF MOLLUSKS. Charles B. Wurtz, Philadelphia.

(Abstract)

Quantitative sampling of mollusks is basically a study of populations. The only practical method for such study is by the means of samples. There are a variety of types of samples, but the ideal quantitative sample must fulfill three fundamental criteria. These are: (1) Collections must be made from a single, well-defined population only, (2) Collections must include all the variations within the population, and (3) The variations must occur in the sample with the same relative frequency they have in the whole population. The first criterion of the ideal sample is almost wholly biological and can easily be resolved. The third criterion is almost wholly statistical and a statistician can resolve it satisfactorily. The second criterion, however, is in a never-never land of inarticulation. The biologist believes it has been accomplished; the statistician doubts it.

In strict quantitative work the collecting devices must be uniform. No sampling device ever invented will take a uniform and constant sample from a total fauna.

Aside from the inability to take quantitative samples because of physical limitations we must consider randomness. The occurrence of any given species within the sample is not a product of chance because of the heterogeneity of environment and the behavioral characteristics of each species.

The second fundamental criterion for the ideal quantitative sample cannot be mechanically realized as a standard practice. Quantitative samples can be taken only if the population is defined with properly restrictive terms. A complete fauna cannot be included in the definition.

SHELL COLLECTING AROUND THE WORLD. Joseph J. Kuchar, Montvale, New Jersey.

This interesting travelog which carried the audience via the media of Kodachrome slides along the Kuchars' route as they circled the globe some months ago was unusually complete; so much so that it was halted by the time limit but concluded later before a larger after-dinner audience.

THE COOSA REVISITED. Paul F. Basch, University of Michigan Museum of Zoology.

(Abstract)

The Coosa River in east central Alabama has been famous for its many endemic species of mollusks for half a century. Since the early collections were made, the river has been greatly altered by the construction of power dams. In June, 1959, the author and Dr. J. B. Burch visited the Coosa in search of *Amphigyra* and *Neoplanorbis,* but no specimens of these genera could be found.

The adjacent Cahaba River near Helena, Shelby County, Alabama, did provide a number of specimens of *Rhodacmea cahawbensis* Walker 1917, and the anatomy of this species was studied and reported upon. On the basis of general body morphology, kidney, brain, pseudobranch, and digestive tract, *Rhodacmea* shows great affinities to other genera of ancylid snails. The shape of the jaw, the radular sac, and albumen gland resemble *Ancylus fluviatilis,* the common European river limpet. The shell, radula, and simple penis (having neither a flagellum nor an ultra-penis arrangement) in *Rhodacmea* are unique among those ancylids whose anatomy has been investigated.

(This paper accompanied by Kodachromes of the area and of anatomical work.)

H. B. Baker: "You are in an interesting field. How about the Russian, Starsbogator, who wants to combine the Ancylidae and the Planorbidae?" Basch: "Yes, how about him!" J. B. Burch: "In making chromosome studies, we found *Rhodacmea cahawbensis* to have 15, *Ferrissia parallela* 30 and *Ancylus fluviatilis* 60."

THE MOLLUSCA OF BERNARD PALISSY, 1580. Aurèle La Rocque, Ohio State University.

(Abstract)

Bernard Palissy (1510?-1590), a self-taught French naturalist and ceramist, was a contemporary of Pierre Belon (1517-1564) and Guillaume Rondelet (1507-1556). Palissy mentions shellfish incidentally in his last and most detailed book, the *Admirable Discourses* (published 1580; translated by the writer, University of Illinois Press, 1957). From his descriptive phrases and the context, it is apparent that he distinguished mussels, cockles, scallops, hardshell clams, oysters, razor clams, ormers, and perhaps sea-slugs, and that he had first-hand knowledge of the living animal, as shown by his clear description of the ormer: "In a part of the Ocean Sea are found a great number of fishes, each carrying a shell on its back, which attaches to the rock, and because it is covered with its shell, it makes six holes in it, in order to breathe, or to obtain food; and as it enlarges its shell it makes a new hole and closes another. The largest of these shells is the color of pearl, and more beautiful: for it is like the rainbow, like the stone called opal: the top of this shell is rather rough and displeasing . . . when the crust is removed the top is as beautiful as the inside."

Palissy undertood the relationship between fossil shells, which he knew well by direct observation in the Paris Basin and elsewhere, and living ones. He stated that some fossil forms were identical with living ones and denied that fossils were oddly shaped rocks. In this he was far in advance of the thinking of his time and had probably arrived at this conclusion independently, although it was known to some ancient Greek writers. At the time when he wrote, the doctors of the University of Paris were teaching that fossils were nothing more than peculiarly shaped rocks.

Palissy left a more lasting record of the Mollusca he observed; he decorated some of his ceramics with casts of actual shells enameled in natural colors. Some of these are faithfully reproduced by Sauzay (1862, *Monographie de l'Oeuvre de Bernard Palissy, suivie d'un choix de ses continuateurs ou imitateurs . . .)* and some of the shells depicted can be identified to family or even genus. Palissy's work gives us an interesting glimpse of sixteenth-century French knowledge of Mollusca long before Linnaeus systematized their nomenclature.

(This paper was illustrated with kodachromes of color plates of Palissy's ceramics decorated with shells.)

OUR EXPERIENCES PHOTOGRAPHING MOLLUSKS. Florence and Theophil Kuczynski, St. Petersburg, Florida.

No one who has browsed through the AMU scrapbook can fail to recognize the Kuczynskis as true artists in what began as a hobby but has now become their vocation, nature photography. Not content with using good film on shots of arrangements of dead shells, they stalk the living mollusk, capturing color and form which rivals the shell in beauty and interest. The account of celebrating Christmas by making an all-day attempt to get a sea cucumber into range and focus concluded a most interesting talk, punctuated by matchless Kodachrome slides.

XANTHONYCHIDAE (PULMONATA). H. Burrington Baker, University of Pennsylvania.

(Abstract)

Xanthonychidae (1879) is the oldest familial name for American helicoids. For its Old World relatives, Eulotidae (1898), with a synonymous "type genus" but in general use, and Helicostylidae (1909) are also prior to Fruticicolidae, which has been used for two different families (1927 and 1928).

SUBSPECIATION IN TRIODOPSIS. Joseph Vagvolgyi, Museum of Comparative Zoölogy, Cambridge, Massachusetts. (Read by Joseph Rosewater.)

(Abstract)

A morphological study of the shells of approximately 6,000 specimens of *Triodopsis* has been carried out. Of these, measurements were taken of about 3,000 specimens, concerning the following characteristics: width and height of the shell, diameter of the umbilicus, distance of the outer and basal teeth from the points of insertion of the outer and basal lips to the shell. In addition, measurements were taken of approximately 200 specimens concerning: number of whorls and length of the base of the parietal lamella.

In plotting and comparing the measurements, either the actual individual values, or the mean values of populations have been used. Five other characteristics also have been examined but not measured. Anatomy of the genitalia of approximately 30 specimens has been studied. Finally, the geographical distribution of the forms in question has been taken into consideration.

As a result of the above studies, several suggestions are made as to change in the present classification of *Triodopsis.*

(1) The species *tridentata* Say, which according to Pilsbry[1] has 6 subspecies, should be split into 5 distinct species.

(a) The nominate form of it: *tridentata,* is to be regarded as a full species, with two subspecies. One of them is *tridentata,* for the other a new subspecific name has been proposed[2]. *Edentilabris* Pilsbry is a synonym of *tridentata tridentata.*

(b) Two other subspecies: *complanata* Pilsbry and *tennesseensis* Walker should be united into one distinct species, which retains the earlier name *complanata. Platysayoides* Brooks is a synonym of this. *Burchi* Hubricht also belongs here. Its taxonomic status, however, is uncertain.

(c) The remaining two subspecies of the earlier species *tridentata: juxtidens* Pilsbry and *discoidea* Pilsbry are to be given full specific rank. Furthermore, a new species is to be separated out from *juxtidens*[3]. The distinctness of the latter two species is accentuated by the phenomenon of character displacement (in regard to: size of shell, diameter of umbilicus and development of the parietal lamella).

(2) The remaining groups of *Triodopsis* have been dealt with in less detail than the *tridentata* group.

(a) *Picea* Hubricht belongs to *fraudulentula fraudulentula* Pilsbry, *clabornensis* Lutz to *fraudulentula vulgata* Pilsbry, and *henriettae* Mazyck to *vultuosa* Gould (which subspecies?). Therefore they are their synonyms.

(b) Preliminary studies indicate, that the species *fallax* Say, *messana* Hubricht, *palustris* Hubricht and *hopetonensis* Shuttleworth may be members of a cline, therefore their specific rank is questionable. This is, however, tentative and has to be confirmed by further investigations.

It has been emphasized that to finish this work further investigations are needed and have been planned.

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[1] Pilsbry, H. A.: Land Mollusca of North America, vol. I., part 2 — 1940.

[2, 3] The description of these new forms will be published at a later date.

Wurtz: "This sort of thing has been done before, by H. B. Baker on *Allogona profunda* and myself on *Triodopsis albolabris.* I think he's working with museum material, not random samples; this is inclined to destroy any statistical value the work might have. He also discusses some species with very little material available, such as *Triodopsis platysayoides;* there are probably less than two dozen complete shells of this species in all of the collections in existence." Hubricht: "I have collected about a dozen living specimens of *platysayoides.*"

This paper concluded the daytime session. Following dinner, everyone assembled in Roberts Hall to enjoy the showing of scenes from past meetings. The response to "Bring your pictures!" was gratifying, and as always it was enjoyable to re-live field trips of other days, recall absent friends, experience the occasional mirthful surprise when an unposed picture was flashed on the screen. The account of the second half of the Kuchars' world tour was enjoyed, as were scenes of the Virgin Islands, home of Mr. G. Usticke, pictures of a vacation cruise about the Aegean Sea by Miss Katherine Anderson and of living *Liguus,* pets of Dr. Rosemary Clarke. The showing was concluded with a sound color movie portraying the beautiful island of Martinique, the presentation of a Philadelphia travel agency.

* * * *

The annual business meeting on Thursday morning was the first event of an exceptionally busy day. The Secretary-Treasurer's report was read:

June 1, 1958 credit balance, $1,494.87; receipts over the current fiscal year, $1,789.60; expenditures for the same period, $1,613.39; June 1, 1959 credit balance, $1,670.08. (Itemized report submitted to Executive Council and books presented for annual audit.)

Net profit on two printings of "How To Collect Shells" (soon to be revised) was $494.97 with 243 copies remaining unsold. The 1958 annual report contained 73 pages, cost $1.04 per copy to print and mail.

On June 1, 1959 there were 638 members in good standing, including four honorary life members, sixteen corresponding members in ten foreign countries, sixteen paid-up life members and 29 charter members.

These reports were accepted as read. Report of the 1959 meeting of the Executive Council:

By a unanimous vote, the names of Dr. Ralph Arnold of Los Angeles and Dr. Julia Gardner of the U. S. National Museum were added to the list of Honorary Life Members and the status of Dr. Paul Bartsch was elevated to that of Honorary Life President.

The invitation of the Director of McGill University to hold the 1960 annual meeting as the guest of that institution was accepted. The meetings are expected to be held in August.

The Council's nominating committee proposed the following slate of officers to serve in 1959-60:

President, Katherine V. W. Palmer; Vice-President, Thomas E. Pulley; 2nd Vice-President (Chairman, AMU Pacific Division), Rudolf Stohler; Secretary-Treasurer, Margaret C. Teskey; Publications Editor, George M. Moore; Councillors-at-Large, Alger P. Blaine, John E. Fitch, Richard W. Foster, Alan Solem.

This completed the report of the action of the Executive Council. It was moved, seconded and carried that the Secretary be instructed to cast a ballot for the unanimous election of the nominated slate of officers.

The delegates representing the Pacific Division were introduced; Mr. and Mrs. John Q. Burch relayed the greetings of Chairman John E. Fitch together with good wishes from the Conchological Club of Southern California, the Pacific Shell Club and the Long Beach Shell Club. They spoke enthusiastically of the coming annual meeting scheduled for the University of Redlands, assuring their Eastern colleagues of a cordial welcome if able to attend this or any future meeting.

A wire was read bearing the "fondest aloha" of Dr. Al Mead, of course, from Hawaii. Wires bearing the greetings of Tom Pulley, Crawford and Jean Cate and the Hadleys were read.

The AMU has twenty affiliated shell clubs in the United States and nine of them were represented on this occasion. As the roll was called these responded with a brief report of the activities of their local group: Richard I. Johnson (Boston Malacological Club); Eugene H. Schmeck (Conchological Section of the Buffalo Society of Natural Sciences); Rose and John Burch (Conchological Club of Southern California); Catherine Ahders (New York Shell Club); Mrs. Ward Brown (Palm Beach County Shell Club); Robert Wagner (Philadelphia Shell Club); Mrs. Charles J. Lewis (Greater St. Louis Shell Club); Lulu B. Seikman (St. Petersburg Shell Club); Charlotte Dawley (North Carolina Shell Club).

Dr. Abbott remarked that a club is soon to be organized in Washington, D. C., and that there are enough collectors in Miami and Chicago to warrant such efforts in those cities.

He asked for opinions on the subject of split sessions and several persons responded. That they spoke for the majority of the delegates was attested by nods of approval as one point or another was stressed. Their combined observations:

As a time saver, dual sessions are unquestionably the answer. However, while pictures of shells and travelog-type papers are entertaining, most amateurs serious enough about their chosen interest to attend a convention which they know in advance will be largely on a scientific level are anxious to learn. Although much of the material in papers prepared by experts in the science are largely beyond their complete comprehension, still some of the knowledge being imparted is bound to be absorbed. It is annoying to be forced to choose between two intriguing titles, and entertaining or instructive as the chosen paper may have been, one is left with the sense of having missed something worthwhile.

The suggestion was made that instead of a program heavy with papers on marine mollusks, or land, or freshwater, an attempt be made to alternate such subjects with a sprinkling of good papers on collecting places and methods. Other "popular" papers might be scheduled for evening sessions. Finally, since the AMU is being recognized as of ever-increasing importance in the scientific field it may be well to add another day to the annual meetings.

Dr. Ruth Turner in a brief speech praised the work of the local committee whose efforts both before and during the meeting had insured its smooth progress. She mentioned especially the zeal of Miss Virginia Orr and Mrs. Bunny Baker, and at her suggestion the delegates tendered a rising vote of thanks to these two in particular as well as to the Philadelphia Shell Club as a whole.

Dr. Aurèle La Rocque, acting in his capacity of editor of the revision of "How to Collect Shells," reminded his listeners that new material would be most welcome.

Dr. Paul Basch said that if enough persons were interested in sharing the nominal cost, he would arrange to have Thiele's *Handbuch der Systematischen Weichtierkunde* put on microcards which may be read with a hand lens or low-power microscope.

These observations completed the annual business meeting and following a brief intermission the following two papers completed the forenoon session:

THE MOLLUSK FAUNA OF BAHAMIAN MANGROVES. Robert Robertson, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

(Abstract)

The red *(Rhizophora Mangle* L.) and black mangroves *(Avicennia nitida* Jacq.) are abundant off sheltered shores throughout the Bahamas but the white mangrove *(Laguncularia racemosa* (L.) Gaertn.) is scarce in most places. The red mangrove commonly grows farthest from, and the white mangrove nearest to the shore. Mollusks live chiefly on the red mangrove.

Littorina (Littoraria) angulifera (Lamarck, 1822) [probably merely a subspecies of *L. scabra* (Linnaeus, 1758) of the Indo-Pacific] when adult lives on the leaves and bark at and above high tide mark. When wetted by high tides or rain it apparently feeds on lichens and fungi. At other times it is attached by dried mucus. Lenderking (Bull. Mar. Sci. Gulf & Carib. 3: 273-296, 1954) has shown that this species alternately sheds egg capsules and veligers, depending on the phase of the moon, unlike six other littorinids in the Bahamas which shed pelagic egg capsules and live on rocky shores. The eighth species in the Bahamas, *L. (Melarhaphe) nebulosa* (Lamarck, 1822), is very scarce and is stated to live on logs, jetties and wreckage. Nothing is known about its reproduction.

A large flattened bivalve, *Isognomon alatus* (Gmelin, 1791), grows in clusters on the roots of mangroves, attached with a byssus. It is abundant in many parts of the Bahamas but is unaccountably scarce in some places, such as Bimini. A pulmonate limpet, *Siphonaria* sp. (or *Williamia?),* lives on the shell valves of this Isognomon but the populations appear to be markedly resurgent so that frequently it cannot be found.

Several species which live chiefly on the surface of mud near mangroves extend up onto the roots, such as *Batillaria minima* (Gmelin, 1791), *Cerithium sagrae* d'Orbigny, 1842 [apparently the oldest available name for the species which has been called *C. variabile* C. B. Adams, 1845, a homonym of *C. variabile* Deshayes, 1833] and *Neritina (Vitta) virginea* (Linnaeus, 1758).

The most prevalent plant on the mangrove roots is a red alga, *Bostrychia* [*"Amphibia"*] *tenella* (Vahl) Agardh. It grows in thick clusters between tide marks and supports a fauna of minute mollusks usually overlooked by collectors. The following, in approximate order of abundance, are the commonest:

Amphithalamus vallei Aguayo & Jaume, 1947
Lasaea bermudensis Bush, 1899
Rissoella (Phycodrosus) caribaea Rehder, 1943
Pedipes mirabilis (v. Mühlfeld, 1818) form *ovalis* C. B. Adams, 1849
Assiminea succinea (Pfeiffer, 1840)
Caecum (Caecum) floridanum Stimpson, 1851
Meioceras nitidum (Stimpson, 1851)

In addition, there are numerous other species which appear less commonly or only as juveniles. Some live exclusively in this habitat. A species of *Odostomia* which apparently is undescribed is also a characteristic member of the fauna but is scarce. Presumably it parasitizes some or all of the common species.

The rissoid *Amphithalamus vallei,* which is about 1 mm. long, appears to be numerically one of the most abundant West Indian marine mollusks. Thousands of specimens can usually be obtained from one handful of *Bostrychia.* The species was described from three Cuban shells and has not been reported since.

Lasaea bermudensis, a small pink bivalve, is ovoviviparous, retaining the young until they are almost half as long as the mother.

The body of *Rissoella caribaea* is black, with a cream-colored pattern on the mantle inside the abapertural part of the last whorl, clearly visible through the transparent shell. There is a pair of tentacle-like processes anterior and median to the true tentacles, as in all species in the family Rissoellidae. In the Bahamas this species has been found only in *Bostrychia* or in other algae but in the Florida Keys has been found in small colonies on rocks (Rehder, Nautilus 57: 33, 1943).

Caecum floridanum and *Meioceras nitidum* are exceedingly variable in shape and the former in the number of axial (circular) ribs when adult. As with the other species which live in *Bostrychia* single samples do not show the whole range of variation. Populations only several hundred yards apart may develop shapes or colors different from one another.

True oysters (Ostreidae) which live in mangrove roots in Florida and Puerto Rico (Mattox, Ecol. Monogr. 19: 339-356, 1949) appear to be absent from the Bahamas. They require waters of fairly low salinities which are nowhere continuously present in the archipelago.

The spotted cowrie *Cypraea (Macrocypraea) zebra* Linnaeus, 1758 [=*C. exanthema* Linnaeus, 1767] does not seem ever to live on mangrove roots in the Bahamas as it does frequently in Florida.

Most of the mollusks which live in association with Bahamian mangroves have dark reddish or brownish shells, colors similar to that of the tannin in mangrove bark. This coloration may perhaps be protective and may be due partially to the fact that the detritus which accumulates in the *Bostrychia,* on which most of the species feed, contains some tannin-bearing particles.

The fauna on wooden dock pilings is derived from that on mangroves, while cement pilings are populated chiefly by species from exposed rocky shores.

This paper was accompanied by an interesting series of Kodachrome slides; since in most cases species associated with mangroves are minute, seeing the beauty of these "blown up" shells was breath-taking.

COLLECTING AT BROOME, WESTERN AUSTRALIA.

Virginia Orr, Academy of Natural Sciences, Philadelphia

(Abstract)

The Natural Science Foundation and the Department of Mollusks of the Academy of Natural Sciences of Philadelphia have been sending expeditions to various parts of the Indo-Pacific to provide material for a series of monographs, Indo-Pacific Mollusca. One such collecting trip was to Broome, Western Australia, where I collected marine mollusks from August 29 to October 8, 1958.

Broome's molluscan fauna is particularly interesting because it is a mixture of wide-spread Indo-Pacific species, such as *Cypraea caput-serpentis* Linné and *Fragum unedo* Linné and endemic Australian forms such as the *Amoria* volutes and *Sunemeroe perexcavata* Fulton. Some of the Broome mollusks, like *Tectus caerulescens* Lamarck, resemble their Indo-Pacific counterparts, *Tectus pyramis* Born (not found at Broome), so closely that it is difficult to believe they are more than geographic races.

An attempt was made to collect data as well as shells. Particular attention was paid to supposed closely related species occupying the same ecologic situations. Feeding habits, egg-laying and micro-habitats were examined whenever possible to determine isolating barriers which may have aided in speciation. In addition, a number of color photographs were taken of living mollusks, to record colors and shapes lost in preserved material.

This was a continuation of the paper which Miss Orr had read before the scientific group on the previous day. She is a superb photographer, and this picture record of a trip to the place to which every collector would gladly retire (temporarily!) held her audience spellbound. Living mollusks of a brilliance to rival their gaudy shells were feeding or otherwise going about their business, volutes emerging from the sand at the precise moment that the rising tide made their capture a touch and go affair—"I'd run like crazy!" said Miss Orr. This "popular-type" paper is the sort to be a must when future programs are planned.

Following lunch members boarded two chartered buses (again, courtesy of the Philadelphia Shell Club) and were transported downtown to the Academy of Natural Sciences. A most interesting series of 15 exhibits arranged by members of the club awaited inspection in corridors off the lobby. Shell books, cases of beautiful specimen shells, members' collections on both hobby and scientific levels, a dealer's display, shells used as decorations and craft objects, panels which illustrated the purpose and varied activities of the Philadelphia Shell Club—all these engaged the interest of the out-of-towners for most of the afternoon.

Groups were escorted on a guided tour of Dr. Abbott's mollusk department where the staff explained some of the "workings" of that famous institution. Of especial interest was the ingenious method of contructing multiple labels. To anyone who has laboriously printed the same data again and again, the idea of one printing serving for any number of identical lots of shells was a revelation.

Then back to the lobby where, as guests of the Philadelphia Shell Club under the chairmanship of Miss Ann Harbison and Mrs. Ruth Ostheimer, everyone enjoyed a most delightful tea, together with the opportunity to relax and evaluate the events of the past few hours.

The buses shuttled back to Haverford in the late afternoon, allowing a brief hour for a hurried fresh-up before the annual banquet scheduled to be held in the ANSP auditorium at 8:00.

This traditional affair was preceded by a most enjoyable cocktail hour sponsored by the Philadelphia Shell Club and in particular by one of its New York members, Dr. Jeanne S. Schwengel. Ill health has curtailed much of Dr. Schwengel's recent activity, and so to her many friends her appearance on this occasion was especially welcome.

The banquet was an equally enjoyable affair. Excellent filet mignon steaks were served to 140 members and their guests, while marking each place was a most unusual souvenir, graciously sent from Tokyo, Japan, by Dr. Alvin R. Cahn. It was a genuine pearl oyster, "canned" in a preservative and guaranteed to contain a pearl of good size and color. Dr. Abbott gave detailed instructions for finding and extracting these gems and it is to be assumed that not many hours passed before everybody had gained access to a can opener and claimed the prize. Some members later had their pearls mounted in rings.

A moment of silence was observed to honor three members (charter members all) departed since the previous meeting: Mrs. Eugene H. Schmeck, Dr. Burnett Smith and Dr. James Zetek.

On behalf of the AMU and its grateful members, Dr. Abbott thanked the members of the Philadelphia Shell Club for having aided in providing such an enjoyable meeting. He introduced the past presidents, then the new president, Dr. Katherine Palmer. She added her thanks to those of Dr. Abbott, saying that she looked forward to seeing everyone at the 1960 meeting in Montreal.

The speaker of the evening was introduced. Dr. Kenneth Prescott, Managing Director of the Academy Museum, developed his subject, "Leisure," as he pointed out that modern man has more of that commodity and is apt to do less with it than at any period in history. That Dr. Prescott is an advocate of his own convictions is borne out by the fact that he devotes much of his leisure time to an interest for which he is gaining local recognition: sculpture.

It was a weary group that boarded the now-familiar buses for the final ride of the day, back to the dormitories and welcome beds.

Friday morning the Philadelphia Shell Club buses together with several private cars took off for the annual field trip. This time the ride was much longer, 80 miles to Cape May, New Jersey. Ninety persons made the trip, the rest having elected to return to their homes ahead of the expected holiday crowds on the highways.

First stop on the itinerary was at the Snow Canning Company where *Spisula solidissima* is processed into minced clams and clam broth. Because the preceding day had been foggy the dredge boats had not worked and so no canning was being done. However, the manager, Mr. William Kleb, took the group through the factory and explained the process from dredge to can. The clams, said he, live on sand banks, are best for canning between ages five to eighteen but if left undisturbed their life span is about twenty years.

The next stop at the beach on Cape May Point satisfied the inner man for here box lunches were enjoyed, accompanied by delicious hot chowder (New England style) provided by the Snow Canning Company.

At this point the group divided into malacologists and paleontologists; the latter elected to accompany Dr. Horace G. Richards on one of the buses to fossil beds along the Cape May Canal while the "shellers" stayed behind to collect on the beach — and *in* the beach, since one devotee reports having unearthed 34 species by digging at the edge of piling ahead of the incoming tide.

Only one bus load of collectors visited the fourth and final stop. While the second bus returned to Philadelphia with those scheduled to leave the city that night, the die-hards stopped at the shucking plant of the Snow Canning Company at South Wildwood, New Jersey. There they collected the usual *Littorina* species—*littorea, saxatilis, obtusata* and *irrorata* together with *Modiolus demissus, Nassarius obsoletus* and *Melampus bidentatus.* This group arrived at Haverford at dusk, weary, hungry—and happy.

MARGARET C. TESKEY, *Secretary*
American Malacological Union

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Dr. Burnett Smith
Dr. James Zetek
Mr. Z. W. Craine

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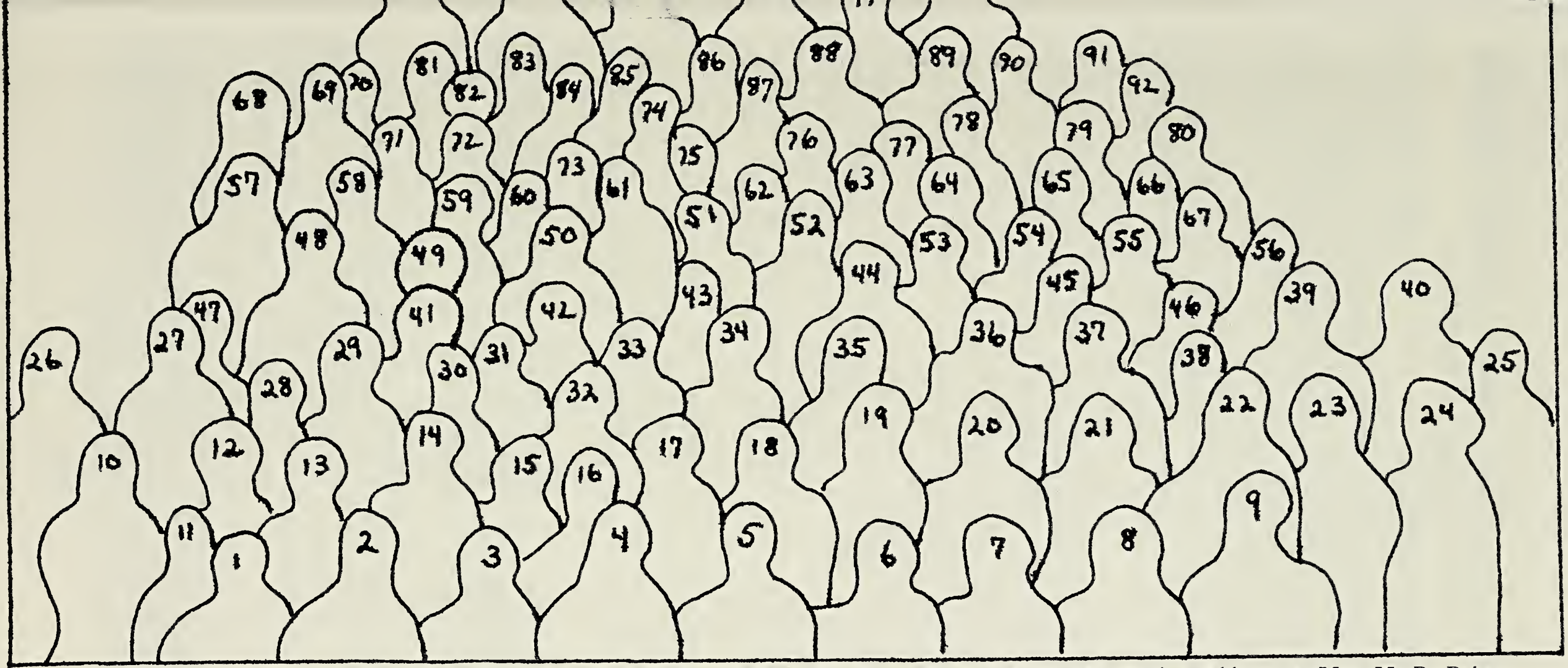

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AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION
TWELFTH ANNUAL MEETING

University of Redlands, California July 9-12, 1959

The twelfth annual meeting of the AMU, Pacific Division, was conducted under the direction of Chairman John E. Fitch and his splendid crew of committees. Although the "500 Shell Scientists" reported by the Los Angeles Times was somewhat of an exaggeration, 81 registrations were official by the time of the banquet on Saturday, July 11.

The morning of July 9 was devoted to registering attending members and guests, to getting settled in the fine quarters provided by Founders Hall, to meeting new friends and old and to admiring the beautiful shell displays arranged by the display committee, headed by Mr. and Mrs. Crawford N. Cate.

The first official session was called to order shortly after lunch by Chairman Fitch in Watchorn Hall. He produced his "Order Keepers"—a battery of timers and alarm clocks plus a sturdy gavel, his guarantees that the schedule as printed in the program would be maintained.

He introduced Dr. George H. Armacost, President of the University of Redlands, who extended a cordial welcome to all, expressing his hope that the meeting would be a great success.

The meeting started with announcements. Dr. Rudolf Stohler announced that The Veliger, official publication of the Northern California Malacozoological Club, invites articles on malacological problems and observations within the Pacific Province. The editorial policy, said he, is: no editing, no title changes, provision of separates for the author. Also he will be pleased to find in the mail any number of subscriptions at the rate of one dollar per year.

John Strohbeen reported that Andrew Sorensen had gone East for medical treatment, hence would not be present.

Before the formal presentation of papers began there was a short recess, welcome since the thermometer registered 105°. These papers were heard on opening day:

MINAMATA DISEASE — A NEW NEUROLOGICAL DISORDER RESULTING FROM THE EATING OF JAPANESE SHELLFISH AND OTHER MARINE ORGANISMS. Bruce W. Halstead, World Life Research Institute, Colton, California.

(Abstract)

Minamata disease is a severe neurological disorder which occurs in humans and animals, resulting from the ingestion of toxic marine organisms from Minamata Bay, Kumamoto Prefecture, Japan. The first outbreak appeared in 1953, with subsequent ones in 1954, 1955, and 1958. The toxic substance is believed to be present in seawood, certain marine invertebrates and fishes. The origin of the poison is not known for a certainty, but ingestion of toxic materials may result in numbness, slurred speech, ataxia, deafness, loss of vision, hypersalivation, emotional lability, tremors, etc. The case fatality rate is about 30% or better. Chemical contamination of the water is believed to be a factor. The disease differs from any previously reported marine bio-intoxication.

SOME RECENT FINDS OF INTEREST IN WEST MEXICO MOLLUSCA. S. Stillman Berry, Redlands, California.

(Abstract)

A rapid expansion of our knowledge of the Panamic fauna is currently taking place, in the course of which important additions to the fauna and other significant discoveries are being made, particularly in Mexican waters. Some especially interesting recent finds have been made by J. E. Fitch, Dr. D. R. Shasky, L. C. Bessom, and the writer, and, together with other materials, are the subject of a preliminary report in an issue of the *Leaflets in Malacology* (vol. 1, no. 18) in press at the time of this meeting. These include a species of *Botula* found boring in shells of *Ostrea iridescens* at Mazatlan and previously known from but scanty material, an apparent third species of *Spondylus* from the Gulf of California, the first American *Galeomma,* a hitherto unrecognized Mazatlanian limpet *(Nomaeopelta myrae),* and the first true American thycid (an Indonesian group of possibly questionable affinity) found parasitic on starfishes of the genus *Phataria* and for which a new subgenus, *Bessomia,* has been proposed.

One important recovery has been that of a complete individual of the curious key-hole limpet, *Stromboli beebei* (Hertlein & Strong) by Dr. Shasky through one of his shrimp-boat contacts. The conchological characters are so close to those of the Californian *Megathura crenulata* that some have thought *Stromboli* would prove to have a similarly immense animal and that the separate genus might even be superfluous. However, the partially dried animal turns out to be of normal size and quite comfortably contained in the shell.

A *Sinum* taken by Miss Mary Long at Cholla Cove seems inseparable from the Central American *S. sanctijohannis* Pilsbry & Lowe. Living examples of the rare *Lophocardium annettae* Dall have recently been taken alive at low water near San Felipe by Mark Rogers and at least one other collector. It was previously thought to be a deep-water species. *Pteropurpura inezana* (Durham), described as a fossil but taken in the recent fauna at Cochore Beach in December 1952 by L. B. Mousley, is another of Dr. Shasky's striking shrimpboat recoveries. An extreme low tide in the Puerto Penasco bight in February of this year resulted in a good number of unusual captures including such things as *Trachycardium consors, Chione kellettii, Cymatium parthenopaeum, Murex Lividus, Hanetia capitanea, Mitra belcheri, Mitra zaca, Pleuroliria nobilis,* and *Conus fergusoni, recurvus, scalaris,* and *virgatus,* almost all of them living. If confirmed by later collections some of these will constitute quite considerable extensions of range. Shrimp-boats had previously been working in the vicinity and one can only wonder whether the wandering and occasional cleaning out of these boats has been entirely without effect upon the apparent local distribution of some species in the Gulf.

MALACOLOGY IN THE NATIONAL MUSEUM OF CANADA. E. L. Bousfield, Ottawa, Canada.

(Abstract)

The size, scope, and history of the shell collection in the National Museum of Canada were outlined. Current malacological research, publication, and exhibits at the Museum were briefly described, with particular reference to Canadian Pacific marines.

SOME OBSERVATIONS ON TROPICAL WEST AMERICAN CONES.

Howard R. Hill, Los Angeles County Museum.

(Abstract)

Twenty-five species and six varieties of cone shells are recognized as occurring along the coast of tropical West America. An additional species *Conus dispar,* Sowerby 1833, is regarded as doubtful. Three species, *C. ebraeus, C. tessulatus* and *C. chaldeus* are common Indo-Pacific cones but have been recorded sparingly from off-shore islands of the Western Pacific.

Conus orion, Broderip 1833, is a valid species although some authorities have regarded it as a variety of *Conus vittatus.* *Conus drangai,* Schwengle 1955, is the same.

Conus nux is a variety of *Conus musicus* of the South Pacific, as suggested by Abbott in 1957. *Conus diadema,* Sowerby 1834, is a variety of *Conus brunneus.*

Conus recurvus and *Conus regularis* exhibit great variation in shape and markings and are often difficult to distinguish, especially in the juvenile stage.

Conus scalaris and *Conus gradatus* are frequently confused because of nearly similar shape and markings.

THE ABALONES OF CALIFORNIA. Keith W. Cox, California Department of Fish and Game.

(Abstract)

This paper limits the number of species of abalone found in California to seven and lists them as follows:

Haliotis rufescens—the red abalone
Haliotis corrugata—the pink abalone
Haliotis fulgens—the southern green abalone
Haliotis walallensis—the northern green abalone
Haliotis cracherodii—the black abalone
Haliotis sorenseni—the white abalone

Habitat and range for each species has been described and corrected according to latest findings.

Variation in shell form among individuals of the same species is discussed and abalones formerly described as separate species are indicated as abnormal and a typical variation of one of the seven established species. In addition to describing shell form, configuration and color, the mantle and epipodial structures for each species are described and emphasis is placed on these soft parts as more positive characteristics for identification than shell structure alone.

After dinner two scheduled features were enjoyed: a movie on the subject of abalones (a continuation of his earlier paper) was shown by Mr. Keith Cox, and Allyn G. Smith presented Kodachromes of the Cape San Lucas Area. During informal discussion Dr. E. L. Bousfield announced that a booklet would be coming off the press about December 1, subject: Canadian Shells. George P. Kanakoff invited any and all to contribute information to the Lost Operculum Club. This "club" is an activity within the Conchological Club of Southern California which began as a joke, the object being to find out which member had the grand-daddy (i.e. largest) of any given species. The mild competition so stimulated has proved to be a great source of geographic and bathymetric range information. Any Eastern Pacific shell may be considered.

Papers were resumed following breakfast on Friday, and during mid-afternoon intermission a group picture was taken.

OYSTERS AND OYSTER PREDATORS IN CALIFORNIA. Harold G. Orcutt, California Department of Fish and Game.

(Abstract)

Oyster culture represents one of the most highly developed marine fisheries. It has been undertaken in many parts of the world and dates back hundreds of years and has developed along divergent lines—such as raft culture, pond culture, rack culture, and tide flat culture as is carried out in California.

The California industry is primarily one of intensive cultivation of imported oysters on privately owned or allotted state water bottoms. The industry may be called "aquaculture," paralleling agriculture in that seed is planted and growing oysters are cultivated and fattened for harvesting. Aquaculture of oysters is dependent upon a successful spawning of oysters so that small free swimming larvae are produced in abundance. Then the actual culturing can begin.

The first requirement is the provision of cultch, with clean, hard surfaces, such as oyster shells, upon which the larvae can attach themselves at the termination of their free swimming stage of life. Next, the young oysters attached to shells must be placed in satisfactory growing conditions. In California they are usually planted on tidal areas exposed at low tide. These bottoms must be relatively firm to prevent too much sinking in and loss of oysters. Pacific oysters, the oysters primarily cultured in California, when attached to large shells, will do well on mud flats too soft for separate small oysters. These areas planted must not be subject to strong currents or wave action, for the oysters will be washed away or piled in rows over the beds.

After a growing period on the grounds where planted, the oysters many times need to be fattened for marketing. This necessitates supplying the oysters with an abundance of plank tonic food so that growth may be rapid and fat oyster meats are produced. This involves the scattering of individual oysters and breaking large clusters to eliminate high competition for food and misshapen shells from crowding. Frequently, transplanting of the oysters to deeper water is necessary. Fattening areas can be determined only by trial and error, for areas once satisfactory have been known to become unproductive.

In California when oysters are large enough for marketing, they are gathered by hand picking or tonging. Marketable size is obtained in one and a half to two years. In the case of the imported Pacific oyster, the cultching phase of the collecting of the young seed oysters is accomplished by the Japanese.

THE INTERPRETATION OF *NEOPILINA*. W. Patrick Milburn, Corona Del Mar, California.

(Abstract)

The discovery during the last decade of members of the group Monoplacophora *(Neopilina)* off the coast of Central and South America rates as probably the most important biological discovery of the century. Comparative studies of the anatomy of *Neopilina* has demonstrated that this animal is almost certainly a very primitive type. This knowledge also very strongly suggests that the molluscs are related to the other segmented animals, the arthropods and annelids. Dr. Lemche has suggested that the fact that these animals have a mucus-feeding device on their oral tentacles suggests at least a distant relation with the bryozoans and brachiopods, groups which feed with a mucus device alone. Relations within the Mollusca are also greatly clarified by the discovery of this animal and today it seems likely that the molluscs may be divided into five supergroups: (1) Monoplacophora, *Neopilina;* (2) probably the Solenogastres; (3) Polyplacophora, the chitons; the next groups with heightened shells and reduced number of gills; (4) Plecypoda, Gastropoda, with the foot highly developed, gills in the rear, and water passing over the gills going over the refreshed blood first (the Scaphopoda probably belong here because of a well-developed foot and embryonic similarities to clams), and (5) Cephalopoda, with foot represented mostly by a siphon, tentacles being from *Neopilina's* type of post-oral tentacles, over-head gills, and the in-coming water passing first over the depleted blood.

STUDIES ON THE FEEDING HABITS AND VENOM OF SEVERAL SPECIES OF *CONUS*. Paul R. Saunders, University of Southern California.

(Abstract)

Observations have been made of the feeding behavior of two dangerously venomous tropical cone snails *(Conus striatus* and *Conus textile)*. A motion picture was shown of a specimen of *C. striatus* attacking and consuming a *Clinocottus analis australis* Hubbs. A film was also shown of *C. textile* attacking and feeding upon several California gastropods. Extracts prepared from the "venom duct" of *C. Textile* are lethal when injected into specimens of *Conus californicus.*

Studies have been made of the feeding habits of *Conus californicus.* Under aquarium conditions, *C. californicus* has been observed to attack and consume several species of Nassarius, certain polychaetes, and occasionally other animals.

THE MOLLUSCAN SECTION, BRITISH MUSEUM OF NATURAL HISTORY. A. Myra Keen, Stanford University.

(Abstract)

During the two centuries of its history, the British Museum has become one of the world's great treasure houses. That its molluscan collections, now in the Natural History Building, form an important part of the treasure must have been recognized long ago by the museum officials who assigned space, for the Molluscan Section has been given the larger part

of one wing and ample exhibit space in a main-floor gallery. At the time of my visit in 1958, the staff of the section consisted of the Curator, Mr. I. C. J. Galbraith, a part-time assistant whom I did not meet, and a full-time assistant, Mr. S. Peter Dance.

The collection is arranged in systematic order, but type specimens, as found, are segregated in a special type set. The cabinets are of finely-finished wood. In general the shells are in good condition—especially so in view of the jolting they had during the last war when bombing destroyed a row of apartment houses across the street from the museum. Specimens glued to cards by early curators have made problems for later workers, but gradually the material is being transferred to glass-topped boxes. Material in alcohol is stored in a separate wing called the New Spirit Building, under a special custodian. Fossil mollusks are under the care of the Paleontology Section, in yet another wing of the building.

Though the visitor may sometimes chafe at what seem restrictive rules of the museum, he soon realizes that these were designed to assure the proper care to what is, after all, a priceless heritage. We owe the British Museum people, past and present, a real debt of gratitude!

THE CAPE SAN LUCAS SUBMARINE CANYON.

Conrad Limbaugh, Scripps Institute of Oceanography, La Jolla, California.

COLLECTING LAND SNAILS IN THE CAPE SAN LUCAS REGION.

Allyn G. Smith, California Academy of Sciences, San Francisco.

(Abstract)

Observations on collecting land and fresh-water snails in the Cape Region of Baja California under mid-winter conditions, illustrated with Kodachrome slides of some of the living specimens collected, together with a few habitat shots taken in the field. Collections were made at 40-50 stations, mostly at low elevations, there being no opportunities to get into the higher mountains. Good collections of various species of *Bulimulus* were made and, in addition, special efforts were devoted to obtaining as representative a collection as possible of the smaller land snails by collecting and sorting stream "drift." Many new records and perhaps one or two new species were found among the smaller species. So far as known, *Bulimulus artemisia* was taken alive for the first time.

REPRODUCTIVE ACTIVITY AND RELATED BIOCHEMICAL EVENTS OF TWO WEST COAST CHITONS.

Richard A. Boolootian, University of California, Los Angeles.

(Abstract)

Two west coast chitons, *Katerina tunicata* and *Mopalia hindsii,* were collected monthly from the vicinity of Monterey Bay, California and their annual reproductive cycles investigated. *K. tunicata* breeds from January to August, with maximum gonadal activity occurring sometime in May; *M. hindsii,* from October to February, the gonads attaining largest size in February. Monthly gonadal ratios for each species vary from year to year,

but the over-all reproductive cycles in terms of peak gonadal activity remains the same for both species. Chemical measurements of the blood of *K. tunicata,* including protein nitrogen, non-protein nitrogen, and reducing sugar show an inverse correlation with gonadal activity.

MOLLUSCAN WORK AT THE CHICAGO NATURAL HISTORY MUSEUM. Alan Solem, Chicago Natural History Museum.

(Abstract)

Oganized as the Columbian Museum of Chicago in 1893, known the world over as the Field Museum, and now called the Chicago Natural History Museum, a staff of more than thirty curators oversees 12½ acres of exhibit halls and collections totaling millions of specimens.

Lower Invertebrates is one of the youngest divisions, having been established in 1939 when Dr. Fritz Haas came from Germany. Under his care the collection grew from 5,000 to nearly 70,000 sets of shells, and a very complete library was assembled. Recent purchases have nearly doubled the collection again, adding 55,000 sets of shells which must be processed. Slides illustrating the storage facilities and method of housing the collection were shown.

The Curators have three major tasks — care of the collections, basic research, and public education through exhibition and popular writing. With very small collections of marine shells, our research efforts have been limited to studies on non-marine mollusks. With the addition of new marine collections, we hope to be able to produce some studies on marine shells as well as continuing the work on land shells.

Chicago Natural History Museum has one exhibition hall devoted to living invertebrates. Completed more than 25 years ago, it is planned to eventually redo the entire hall. One 12 foot rectangular case has been completed as an experiment, and more exhibits will be undertaken when needed specimens and models of the living animals become available.

EIGHTY YEARS EXPERIENCE AS A CONCHOLOGIST. Ralph Arnold, Santa Barbara, California. (Read by George Ide.)

(Abstract)

Ralph Arnold, geologist and petroleum engineer, was born in Marshaltown, Iowa, April 14, 1875. He came to Pasadena, California, in 1880. In 1896 he was graduated from Throop Polytechnic Institute (now California Institute of Technology), from Stanford University in 1899 with a degree in Geology and Mining. He received his M.A. in 1900 and his Ph.D. in geology and paleontology from Stanford in 1902. The University of Pittsburgh granted him a Sc.D. in 1921 for his work as organizer and head of the Natural Resources Branch, U. S. Bureau of Internal Revenue. In 1925 he was given a D.Eng. degree by the University of Southern California.

He married Frankie Winninette Stokes in 1899. Their children are Winninette and Elizabeth.

Dr. Arnold was assistant in Mineralogy and Field Assistant in Geology at Stanford until 1903 when he joined the U. S. Geological Survey.

In the economic field his most important enterprise was the organization and direction of an economic geological survey of the oil resources of northern Venezuela and Trinidad.

Dr. Arnold was actively associated with the discovery or initial development of many of the important oil fields in California. Among the oil companies which Dr. Arnold assisted in financing were The General Petroleum Company; the Union Oil Company of California; California Petroleum Company (now Texaco); and the early financing of Midwest Refining Company, Wyoming (now Standard Oil Company of Indiana).

In 1937 at the request of the Director of the Irrigation Commission of Mexico, Dr. Arnold made the final location of the Angostura (Sonora) Dam.

Dr. Arnold belongs to many organizations among which are the Malacological Society of London, The National Geographical Society, The Academy of Natural Sciences of Philadelphia, and the Cooper Ornithological Society.

His activities have covered geology, petroleum geology and engineering, paleontology, conchology, taxation, ornithology, history and politics. His hobby is gardening.

INCREASING COMPLEXITY IN THE PROBLEMS OF THE GIANT AFRICAN SNAIL. Albert R. Mead, University of Arizona.

(Abstract)

Some populations of *Achatina fulica* Bowdich on Mt. Tanalus and Roundtop in Oahu, in the state of Hawaii, surpass in density nearly all other populations observed, a new infestation was found on the island of Kauai; and live specimens were intercepted and destroyed on the island of Hawaii and in central Arizona. Both the intensity of the symptoms and the incidence of the disease syndrome in the Mahinui population on Oahu have increased markedly since 1955. Still more mollusk and arthropod predators are being released in Hawaii in an effort to control the giant snail. Some of the mollusk predators were found to have become diseased and, significantly, to be unable to go as long as the giant snail without food and water. A 33% recovery of 400 marked giant snails in Mahinui 8 months after release revealed much in the epizootiology and population dynamics. Negative specimens became positive; positive became worse or were not recovered. There was strong evidence of a great population turnover with the reproductive potential offsetting the greater death rate to hold the population essentially at an apparent static level. The amphipod, *Orchestia platensis,* may be implicated as a vector of the disease. It is proposed that there exists a "migration cycle" comparable to the "hydration cycle" of Howes & Wells (1934). Chick feeding experiments indicate that the dried snail meal contains a good source of vitamin B complex. Histopathological and etiological studies are being continued under an NIH grant both on the giant snail in Hawaii and the introduced achatinid, *Rumina decollata,* which was found to have a similar syndrome in Arizona populations.

THE LONDON COLLOQUIUM ON TAXONOMY, AND ITS CONSEQUENCES. A. Myra Keen, Stanford University.

(Abstract)

The third and presumably final Colloquium on Zoological Nomenclature was held July 9 to 16, 1958, during the week before the 15th International Zoological Congress, in London. Meeting in an advisory capacity, the members of the Colloquium agreed upon a fairly simple nomenclature code based on a draft compiled by Prof. J. Chester Bradley, president of the Nomenclatural Section, from two sources—the body of opinions and rulings made over the years by the Commission and the unpublished "Official" Code. (The version now used—reprinted, for example, in "Procedure in Taxonomy" — though substantially correct, is considered unofficial.) Only a general outline could be sketched during the week, and the final editing of the new Code was left to a committee of six: two British, two French, and two Americans. When the Commission approves this version, it will be published as the Official Code—some 60 years after the first adoption in 1901.

Except on one major point, the new code will be much like the one we have been using but rearranged as to order and altered as to some details. The major difference involves the "Law of Prescription," a proposal that the Copenhagen Colloquium in 1953 had been discussed and rejected and then subsequently passed at the Nomenclatural Section meeting. This issue, at London, brought out the warmest debate of the session. Again, the vote of the Colloquium—by a substantial majority—was against this principle. However, at the Nomenclatural Section meeting it was reinstated, this time under a new title, as the "Statute of Limitations." The Law of Priority, declared in one part of the Preamble of the new code to be the basis for zoological nomenclature, is, under this "Statute," sharply limited by time and common usage.

Another critical issue debated at the Nomenclature Section meeting was the matter of the Commission's publications, all of which are costly and are copyrighted. (However, it was voted that the new Code should not be copyrighted.) Publication costs have been, up to now, borne by the individuals and libraries subscribing. The Commissions hopes to find ways to increase circulation and lower unit prices. A plan must also be devised for financing the costs of the secretarial office, which have hitherto been covered by the profits on publications. During the past year no papers have been issued by the Publications Office except such Opinions and Directions as had been in process before the London meetings. No new ones can be issued until petitions now in the files are published in the Bulletin of Zoological Nomenclature, zoologists have had at least a six-month period for writing letters of support or protest, and the Commissioners have had time to study results and send in their voting papers.

In view of the delays and frustrations inherent in the present system, one wonders whether nomenclatural guidance, at least on minor issues, could not be effected better by putting into practice one of the Commission's earlier suggestions, Declaration 10: "On the importance of forming specialist groups for the study of the nomenclature of particular divisions of the Animal Kingdom." Could, perhaps, an American Nomenclature Committee, working with similar committees from the other countries that

have active malacology societies, reach agreements on many problems that do not involve matters of basic principle (such, for example, as whether a certain work is or is not binomial or what species is to be accepted as type of a given genus) and thus relieve the Commission of its present impossibly large burden?

KODACHROMES OF THE CAPE SAN LUCAS AREA. Allyn G. Smith, California Academy of Science, San Francisco, California.

(Abstract)

Comments on the California Academy of Sciences Natural History Field Expedition to the Cape Region of Baja California in December and January 1959, illustrated with Kodachrome slides taken during the Expedition. The area covered includes the southern end of the peninsula from the vicinity of La Paz and on the main roads from La Paz through Todos Santos to Cabo San Lucas and around the Gulf side through San Jose del Cabo, Miraflores, San Antonio, and El Triumpho. While the emphasis of the Expedition was devoted to the collection of botanical specimens, the herpetological and the land and fresh-water molluscan fauna was also investigated. A limited amount of marine collection was accomplished.

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The general business meeting was called at 4:00 P.M. It was moved, seconded and carried that the minutes of the 1958 AMU - Pacific Division meeting be accepted as printed in bulletin number 25 of the American Malacological Union.

Following one correction, the financial report as prepared by Rose Burch was accepted. It reported a balance of $92.36.

The Secretary and Treasurer were reminded that their reports were due to the current Chairman within thirty days. All speakers were asked to be prompt in submitting their abstracts.

Chairman Fitch had appointed Mrs. Rose Burch as AMU-PD delegate to the 1959 AMU meeting at Haverford, Pennsylvania. She presented a fine report of her attendance, bringing the news that the 1960 AMU meeting will be held at McGill University in Montreal, Canada, that Dr. Ralph Arnold had been elected to honorary AMU membership, and that John E. Fitch was elected Councillor-at-Large for 1959-60.

It was announced that the Executive Board had received an invitation from the Tucson, Arizona, Chamber of Commerce to hold an AMU-PD meeting in that city at a future date, and that the 1960 meeting was scheduled for Asilomar. (Dr. Rudolf Stohler confided that he had arranged for some especially favorable tides at Asilomar about June 23rd.) A suggestion was relayed from the President of the AMU that the Pacific Division might at some future date schedule a meeting for Hawaii.

Greetings from Past-Chairman Al Mead in Hawaii and from AMU Secretary-Treasurer Margaret Teskey in Wisconsin were read.

Chairman Keen of the Nominating Committee presented the following slate of AMU-PD officers for 1959-60:

Chairman, Rudolf Stohler; Vice-Chairman, Howard R. Hill; Secretary, Lucille Zellers; Treasurer, Jean Cate. Chairman called for further nominations from the floor. There being none, it was moved and seconded that a unanimous ballot be cast for the election of the slate as read; carried by unanimous voice vote.

With much good will, the business meeting was adjourned.

A picnic and field trip was scheduled for Saturday; it was an excursion to Bluff Lake in the San Bernardino Mountains—elevation 8,000 feet. Dr. S. Stillman Berry conducted this event in his usual delightful manner, though he will have to look to his laurels in the field. Young Scott Rogers, age 12 weeks, is coming on fast as a land and freshwater malacologist. Dr. Berry presented a fascinating talk to the 37 field trip participants:

RANDOM NOTES ON THE BIOTA OF THE SAN BERNARDINO MOUNTAINS

(Abstract)

The speaker sketched the theory of zonation as it is found so elegantly illustrated in the San Bernardino Mountains. All zones, with the exception of the Tropical, are present here from the Lower Sonoran to the Alpine-Arctic, although the uppermost three are much blurred by telescoping. The more conspicuous trees and other plants pertinent to the zones visited were pointed out, including six of the eight species of *Pinus* native here, *Lilium parryi* (seen on the way up), and the spectacular parasitic "snow-plant." The isolated occurrence of some species far south of their usual range (five-finger fern, box elder, aspen, bitter-root, etc.) was noted, as well as the occasional curious development of "zonal islands," usually around meadows or "cienegas," at lower altitudes than those normal for the zone in question. A number of the more beautiful or unusual plants to be found in these mountains were mentioned including the two dainty phloxes to which classic salutation is extended in the pages of Reginald Farrer's "English Rock Garden."

After discussing some of the more interesting animals including the birds, a brief survey was undertaken of the work of the more important biologists who have pioneered in field work here, with special attention to S. B. Parish, Mr. and Mrs. Frank Stephens, and Joseph Grinnell, the last of whom established one of his most important early camps at Bluff Lake Cienega. The biota of the entire Transition and Canadian Zones here was noted as essentially southern Sierra Nevadan in character.

Finally the known Mollusca of these mountains were discussed and the 16 species (6 fresh-water, 10 land) which have been recorded from Bluff Lake Cienega and its immediate environs were itemized. The Great Basin affinity of some of the aquatic species is a curious feature. Four mollusks have been described with this meadow and its near vicinity as type-locality, one each by Sterki, Hannabal, Pilsbry and Berry. The present season has been an almost unprecedentedly dry one. Nevertheless the hints given as to where to search for them and the assiduity with which these were applied resulted in the members of the party later reporting the capture of all but one of the sixteen.

Members not taking part in the trip to the mountains had their own field day, catching up on visiting with friends and settling, more or less, all of the major problems in the malacological world.

The banquet was held Saturday evening in the cafeteria on the campus of Redlands University. Seven tables were beautifully decorated for the occasion with gorgonias, coral and shells. The lovely pieces had been assembled by the decorations committee under the direction of Mr. and Mrs. Harry Turver, and later in the evening were awarded by lot to a fortunate fourteen. Miniature seascapes within pairs of pecten shells served as place favors for all. The Give-Away committee, headed by Dorothy Brown, provided exquisite corsages for all of the ladies present, and later in the evening this same committee unveiled a huge number of shells as gifts for all.

Dr. A. Myra Keen was there, Chairman of the Nominations Committee, but for much more than that service was she honored. As a small token of appreciation of her contribution to the literature of malacology she received a beautiful orchid. Dr. Berry then presented to her an assemblage of *Cardium* shells—this because she loves *cockles!*

During the course of a fine dinner, Chairman Fitch was busy giving credit to those who had joined him in a conspiracy to out-do all previous AMU-PD meetings and so make things rough on any and all who will follow him:

To Mr. and Mrs. Howard L. Fletcher, responsible for all of the local arrangements; to Dr. S. Stillman Berry, conductor of the field trip and exhibitor of rare books and shells; to Mr. and Mrs. Crawford Cate, for their supervision of all the beautiful exhibits in the lobby plus contributing one of their own; to the other exhibitors and their shell displays: E. W. Ulrich, Florida spectaculars; Donald Shasky, Gulf of California rarities; Rose Burch, Olive shells; Gilbert Grau, Pectens; Wendell Gregg, land shells; John Strohbeen, mounted seaweeds. Again to Mary and Harry Turver for the lovely pins and slides they had made for those attending the meeting, and finally to Mr. Larry Hendon and Mrs. Lockwood for their tireless efforts to make sure that everyone attending would be perfectly happy!

During the evening Mr. and Mrs. John Q. Burch were extended greetings on the occasion of their forty-third wedding anniversary.

Highlight of the evening was the talk on Bathyscaphing in the Mediterranean Sea by Dr. Andreas B. Rechnitzer. Senior scientific officer on the Navy-owned, French-built bathyscaph TRIESTE, Dr. Rechnitzer had been sent by the Navy to the Mediterranean to learn its operation from the Picards who designed and built it. He explained what a bathyscaph is, how it differs from other deep sea diving apparatus and how it operates. He told of some of his descents in the Mediterranean and again off San Diego.

The movies he showed included some shots of the bottom and the sea life there in several thousand feet of water. One of the interesting things he mentioned about a dive in the San Diego trough was observing thousands of hermit crabs in mollusk shells being tumbled along the bottom by the fast moving current there, such as had never been suspected along the floor of a submarine trough or trench.

On Sunday, final day of the meeting, the business meeting was reopened. It was called to attention that Dr. Myra Keen is not technically a Past-

Chairman of the AMU, Pacific Division. During the year that she was AMU President, the Pacific Division was brought into being. Since Dr. Keen was greatly responsible for its organization it was the unanimous opinion of the membership that she be made an Honorary Life Member of the AMU-PD. This will require, however, an amendment to the AMU-PD by-laws as they presently stand.

The following papers occupied the remainder of Sunday morning:

THE RED TIDE OF 1958 AT ENSENADA. Rudolf Stohler, University of California.

THE NATURE AND RELATIONSHIP OF THE PANAMIC FAUNA AS MANIFESTED BY THE MOLLUSCA. S. Stillman Berry, Redlands, California.

(Abstract)

The Panamic Province is one of the important life areas of the world. It is a strictly linear province and notably extensive only from north to south, extending roughly from Magdalena Bay and the northern extremity of the Gulf of California to northern Peru about as far as Paita, where it is blocked by the cool water of the Humboldt Current and passes rather abruptly into the temperate Peruvian Province. It therefore lies almost wholly north of the Equator. It may to some extent be divided into subprovinces, but the general character of the molluscan fauna remains pretty much the same throughout. In the Scammon Lagoon — Magdalena Bay area we find a zone of overlap with the Californian Province much wider than prevails at the southern extension.

Due to the impermanence of the mid-American land connections it is natural that the closest relationships of the present Panamic fauna are with the Caribbean. Some wanderers appear to have come down from the temperate north, especially noteworthy among the limpets and chitons, but a definitely austral element seems less in evidence. A curious similarity with west Africa in a few forms such as *Agaronia* lends its bit of support to the Gondwana bridge and archipelago hypothesis of Schuchert and Willis; but with the great Indo-Malayan fauna one must hunt hard to establish even the most tenuous connection. True, there exists a surprisingly strong Indo-Malayan outpost element in the fauna of Clipperton Island, but only a remnant remains in the Galapagos and at Cocos Island. When the mainland is reached even this remnant has all but faded away, though scattered and as yet not too well explained records exist of a few anomalous species such as *Cypraea caput-serpentis* and *Conus ebraeus.*

As compared with other faunal provinces in the Tropics, the great richness of such groups as the *Arcidae* (36 species), *Cardiidae* (17 species), *Veneridae* (especially *Chione* and *Pitar* with 18 species each), *Tellina* (notably the subgenus *Eurytellina* with 11 plus, and *Moerella* with 14 species), *Donax* (15 species), *Semelidae* (33 plus), *Corbula* (17), the *Polyplacophora* (51 plus), *Acmaeidae* (19 plus), *Epitoniidae* (78 plus),

Turritella (10), *Calyptraeidae* (especially *Crucibulum* with 7, and *Crepidula* with 11 species), *Acanthina* (6), the *Columbellidae* (including *Anachis* with 50 plus or minus, and *Strombina* with 23 species), *Hanetia* (6), *Nassarius* (27 plus or minus), *Olivella* (17 plus), the *Cancellariidae* (34 plus), *Turridae* (102 plus species, of which *Crassispira* S. L. accounts for 62!), *Terebridae* (38 plus), *Pyramidelladae* (possibly in excess of 300 species), and *Octopus* (9 plus species). With these and others the Province has its full share of the more spectacular mollusks, including a remarkable number which, like *Glycimeris gigantea, Laevicardium elatum, Dosinia ponderosa, Ancistromesus mexicanus, Chione gnidia, Turritella anactor, broderipiana, gonostoma* and *leucostoma, Malea ringens, Purpura patula pansa, Acanthina muricata, Fusinus dupetitthouarsii, Mitra belcheri,* and *swainsoni, Oliva porphyria* and *incrassata, Pleuroliria nobilis,* and *Siponaria gigas,* loom as giants of their kind.

Against this one observes the comparative weakness of the Province in *Haliotidae, Patellidae, Neritidae, Cypraeidae, Cassididae, Strombidae, Harpidae, Volutidae, Mitridae, Marginellidae,* and *Olividae* (other than *Olivella),* despite some magnificent individual species which stand as exceptions. Entirely, and in some cases rather strangely, absent are many groups like *Tridacna, Acanthopleura, true Patella, Cellana, Trochus, Phasianella, Pisania, Peristernia, Tritonalia (Charonia), Xancus (Turbinella),* and, perhaps most remarkably of all, *Spirula* and two of the major cephalopod genera, *Sepia* and *Sepioteuthis,* which are of major importance in much of the Pacific but falter long before approaching its eastern shores.

DERIVATION OF THE HELMINTHOGLYPTINAE WITH PARTICULAR REFERENCE TO THE DESERT FORMS. Wendell O. Gregg, Los Angeles, California.

(Abstract)

It is generally believed that our North American dart bearing snails are derived from Eurasian ancestors. *Monadenia* is excluded from the subfamily *Helminthoglyptinae* because of the diversity of anatomical structure and the belief that it is from a different genetic stock. The genera *Sonorelix* and *Sonorella* are placed in that subfamily because of the close relationship in structure, though there has been a loss of structures characteristic of our dart bearing snails.

In a comparative study of the reproductive anatomy of this subfamily, it is seen that diversification has taken place thru (a) modification of structure and (b) loss or simplification of structures. The latter is particularly apparent in dealing with our desert forms.

In *Helminthoglypta* the modification has been principally in the elongation of the atril sac with change in position of the dart sac and structure of the mucus glands, also in a double-tubed structure of the penis instead of a true verge. In genus *Micrarionta,* the dart sac is located more nearly in the conventional position with modification of the mucus glands and other structures. In *Micrarionta* s. s. there is loss of the spermathecal diverticulum. In subgenus *Plesarionta,* a very short spermathecal

diverticulum may or may not be present. In subgenus *Xerarionta,* there is a long spermathecal diverticulum with loss of verge. The structures in subgenus *Eremarionta* resemble those of *Micrarionta* s. s. in a general way but in *Eremarionta* there is *always* a well formed spermathecal diverticulum. Subgenus *Chamaearionta* Berry differs anatomically from *Eremarionta* in the *Eremarionta* in the absence of verge, with both epiphallic caecum and spermathecal diverticulum rudimentary. In genus *Sonorelix* s. s. there is complete loss of the dart apparatus. In subgenus *Herpeteros,* the epiphallic caecum is reduced to a mere rudiment. In genus *Sonorella* the process of simplification is continued with complete loss of spermathecal diverticulum.

The direction of evolutionary change in the desert snails is indicated by two examples of intermediate forms, *Micrarionta sodalis* has lost the dart sac and descending mucus gland. In *Micrarionta (Eremarionta) argus,* the dart apparatus is completely lost while the epiphallic caecum is reduced to a rudiment.

A QUANTITATIVE STUDY OF EVOLUTION IN *PECTEN*. Joshua L. Baily, Jr. (Read by E. P. Chace), San Diego, California.

(Abstract)

This investigation stemmed from certain conclusions drawn by Davenport in the early days of the century as the result of the application of a technique applied by him to *Pecten opercularis,* Linneaus.

To the present writer it seems that Davenport's argument would have been more convincing if he had shown that his technique when applied to the other genera than *Pecten* led to inconsistent conclusions. The present investigation was undertaken to investigate this possibility.

THE PUZZLING CASE OF *HALIOTIS EMMAE.* Robert R. Talmadge, Willow Creek, California.

(Abstract)

Specimen evidence now suggests that what we have termed three separate species of Haliotids from Australia, may be only geographical races of a single species. The shells are similar, yet quite distinct; but have soft parts that are so similar that they may be called identical. Some of the specimens examined, are probably among the first live taken examples known; thus presenting us with new data that was not available to some of the earlier malacologists. Intergradational specimens were located, but at the present time too few specimens are known to be certain if the range is continuous or sporatic at the periphery.

Animals as well as shell series of the *emmae, semilplicata,* and *ethologus* were examined in detail. The generic as well as the specific bibliographies were checked, and specimens were compared with original type lots. It now appears that all are the races of a single species.

SYSTEMATIC CLASSIFICATION IN OLIVIDAE. John Q. Burch, Los Angeles, California. (The abstract of this paper appears on page 5.)

With the reading of the last formal paper, Chairman Fitch thanked all those who had contributed to the program. There being one further item of business, he proceeded thereto—the passing of the gavel to Dr. Rudolf Stohler and with it the authority of office. This was recognized by those present who gave a standing ovation to the new officers.

Respectfully submitted,

FAYE B. HOWARD, *Secretary*
American Malacological Union,
Pacific Division

* * * *

The many friends of Mr. and Mrs. Robert R. Alexander of La Mesa, California, were saddened to learn of the death of Mr. Alexander which occurred in September. Both attended the Pacific Division annual meeting at Redlands.

* * * *

Another good friend was lost when Lloyd E. Berry died in October. His life-long interest in plants, gems and minerals exceeded only by his love for beautiful shells, Mr. Berry owned one of the finest private collections of *Cypraea* in this country.

* * * *

The suggestion has been made that rather than an all-inclusive membership list such as appears in this and earlier AMU bulletins, a separate listing be made of those persons residing west of the Rocky Mountains (i.e., AMU-Pacific Division members). If enough approval is indicated, this procedure will be followed when the 1960 annual report is compiled.

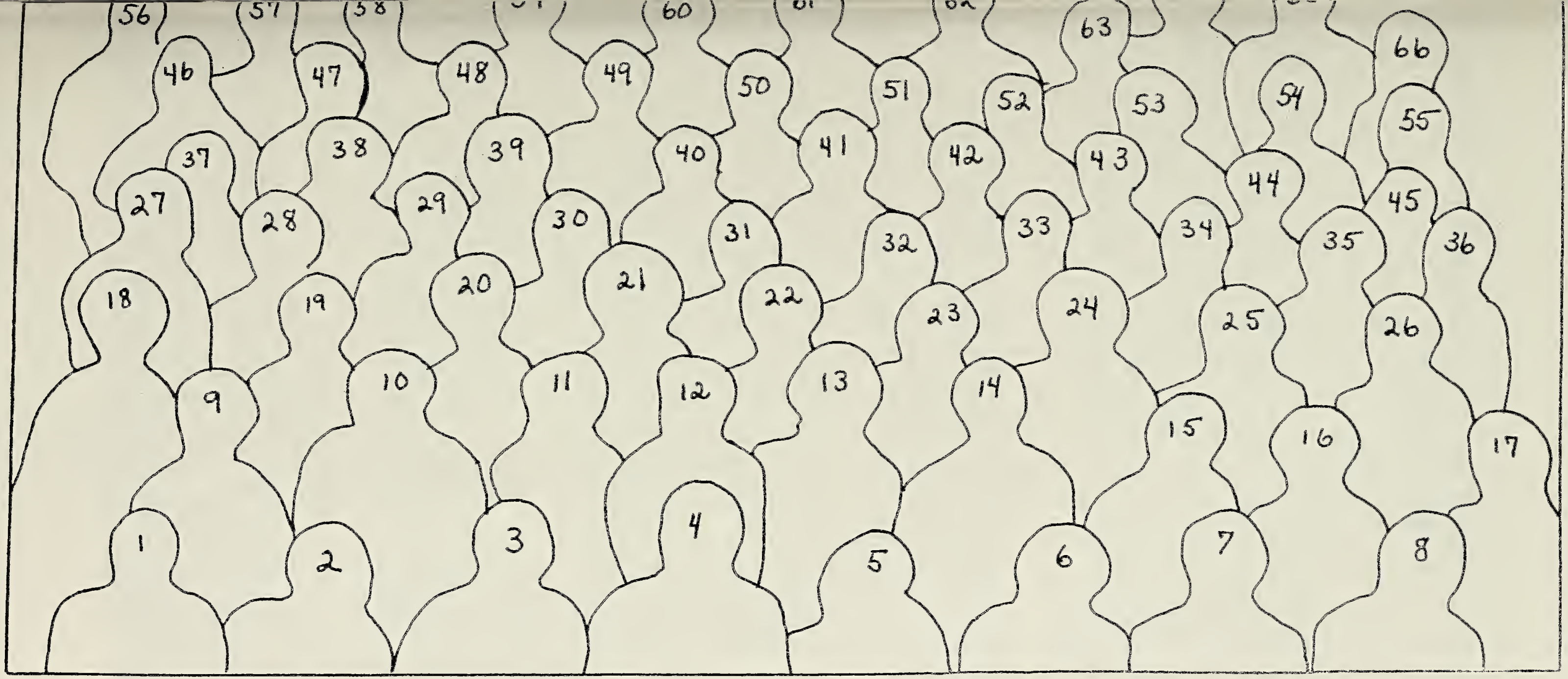
ATTENDING THE 1959 AMU - PACIFIC DIVISION MEETING

Mr. and Mrs. Robert R. Alexander, La Mesa, California
Edwin C. Allison, Berkeley, California
Stella Barron, Redlands, California
Mr. and Mrs. E. P. Baker, Downey, California
Dr. S. Stillman Berry, Redlands, California
Mr. and Mrs. Ralph Bormann, Long Beach, California
Dr. E. L. Bousfield, Ottawa, Canada
Miss Ann and Mrs. Dorothy Brown, Los Angeles, California
Mary Louise Brown, Santa Ana, California
Mr. and Mrs. John Q. Burch, Los Angeles, California
Mr. and Mrs. Crawford N. Cate, Los Angeles, California
Mr. and Mrs. E. P. Chace, San Diego, California
Isabelle Collins, Norwalk, California
Keith W. Cox, Woodside, California
Frances L. Cramer, Los Angeles, California
Elois Crum, Los Angeles, California
Mr. and Mrs. Glen Dawson, Pasadena, California
J. W. and Renee DuShane, Altadena, California
Ruth E. Eaton, Riverside, California
Dr. William K. Emerson, New York City
James R. Emerson, Berkeley, California
Walter J. Eyerdam, Seattle, Washington
Bessie Falconer, Loma Linda, California
Mrs. Ruth C. Finley, Sacramento, California
Mr. and Mrs. John E. Fitch, San Pedro, California
Edna H. Fletcher, Hemet, California
Mr. and Mrs. Howard L. Fletcher, Redlands, California
Mr. and Mrs. Meade E. French, San Diego, California
Mr. and Mrs. W. Galbreth, Pasadena, California
Wendell O. Gregg, M.D., Los Angeles, California
Mrs. Bessie B. Harris, Ranch Cordova, California
Dr. and Mrs. Howard R. Hill, Los Angeles, California
Mrs. Faye B. Howard, Pacific Palisades, California
Mr. and Mrs. G. L. Howard, Playa Del Ray, California
George P. Kanakoff, Los Angeles, California
Mrs. Ernest B. and Dr. Myra Keen, Palo Alto, California
Mrs. Florence E. LaFayette, Carmichael, California
Conrad Linbaugh, San Diego, California
Mary E. Long, Sonora, California
James H. McLean, Stanford, California
W. Patrick Milburn, Corona Del Mar, California
Priscilla Militante, Stanford, California
Frank W. Moore, Redlands, California
Roy L. Morrison, San Diego, California
Mrs. Helen O'Brien, Long Beach, California
Mrs. L. H. and Teri Lee Poorman, Pasadena, California

Mr. and Mrs. A. M. Power, Redlands, California
Mrs. Stuarte E. Power, Redlands, California
Mrs. W. B. Power, Redlands, California
Mark E. Rogers, Mill Creek Canyon, California
J. Todd Schowalter, Redlands, California
Dr. and Mrs. Donald R. Shasky, Glendale, California
Allyn G. Smith, Berkeley, California
Dr. Alan Solem, Oak Park, Illinois
Mr. and Mrs. John Strobeen, Santa Cruz, California
Charlotte and Katherine M. Shuman, Seal Beach, California
Gale Sphon, Bellflower, California
Dr. Rudolf Stohler, Berkeley, California
Ray Summers, Pataluma, California
Robert R. Talmadge, Willow Creek, California
Joan Lillian Troesch, Downey, California
Mrs. Wyllie Taylor, Roseville, California
Mr. and Mrs. Harry R. Turver, Yucaipa, California
Monroe H. Walton, Glendale, California
John Narjone, Redlands, California
Phyllis Wilson, Elk Grove, California
Mrs. Fay Wolfson, San Diego, California

AM. MALACOLOGICAL UNION PAC. DIV. U. OF REDLANDS JULY 1959

MALACOLOGICAL UNION, PACIFIC DIVISION



1. Allyn G. Smith, 2. Elsie M. Chace, 3. Dr. Rudolf Stohler, 4. John E. Fitch, 5. Faye B. Howard, 6. Eva Mae Fletcher, 7. E. P. Baker, 8. Dr. Myra Keen, 9. Priscilla Militante, 10. Mary E. Long, 11. Phyllis Wilson, 12. Frances L. Cramer, 13. Elois Crum, 14. Ruth C. French, 15. Grace Alexander, 16. Wyllie Taylor, 17. Miss O'Brien, 18. Helen O'Brien, 19. Bessie B. Harris, 20. Bessie Falconer, 21. Rose Burch, 22. Charlotte M. Shuman, 23. Emory P. Chace, 24. Edna H. Fletcher, 25. Mary E. Turver, 27. Mrs. Ernest B. Keen, 28. Jean Cate, 29. George P. Kanakoff, 30. Joan Lillian Troesch, 31. Ann Brown, 32. Roy L. Morrison, 33. Ralph Bormann, 34. Robert R. Talmadge, 35. Dorothy Brown, 36. Ruth A. Shasky, 37. Irene Baker, 38. Florence LaFayette, 39. Mary Bormann, 40. Carolyn Strohbeen, 41. Ruth C. Finley, 42. Arline Fitch, 43. Betty Hill, 44. Ruth E. Eaton, 45. Katherine Shuman, 46. Mr. O'Brien, 47. Meade E. French, 48. Crawford N. Cate, 49. John Q. Burch, 50. Dr. S. Stillman Berry, 51. Gale Sphon, 52. Walter J. Eyerdam, 53. Robert R. Alexander, 54. Dr. William K. Emerson, 55. Mark E. Rogers, 56. Harry R. Turver, 57. James McLean, 58. Edwin C. Allison, 59. J. Todd Schowalter, 60. Dr. Howard R. Hill, 61. Ray Summers 62. Munroe H. Walton, 63. Dr. Alan Solem, 64. John P. Strohbeen, 65. Dr. Donald R. Shasky, 66. Howard L. Fletcher.

BY-LAWS OF THE AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

(Adopted June 28, 1958)

Article I

Section 1—This organization shall be known as the American Malacological Union, Pacific Division, and as such it is an integral and inseparable part of the parent organization, the American Malacological Union.

Section 2—The purpose in forming the Division is to give members of the American Malacological Union living west of the Rocky Mountains in the Pacific Coast region opportunity to attend regional annual meetings.

Section 3—No provision in these By-Laws shall be interpreted as superseding or abridging provisions in the Constitution and By-Laws of the national organization.

Article II

Section 1—The administration of the affairs of the Division shall be vested in an Executive Board, which shall consist of the currently elected officers and the three most recent past Chairmen of the Pacific Division. Its Chairman shall be the current Division Chairman.

(1) The terms of members of the Board shall begin one month after the close of the annual meeting.

(2) Vacancies on the Board may be filled by appointment of the Chairman, preferably from among previous Chairmen.

(3) No person shall be a Board member who has not been a member of the American Malacological Union for at least two years.

Section 2—The Board shall meet annually during a Pacific Division annual meeting, prior to the regular business meeting, and at such other times as agreed upon by the majority of the Board. Insofar as possible, matters requiring action between regular annual meetings shall be handled through a poll of the Board by the Chairman.

Section 3—The time and the place of the Annual Meeting shall be decided upon by the Board.

Section 4—The Board shall pass on all matters involving policy; but its decisions are subject to ratification by a majority vote of the Division membership attending the annual meeting. The Board shall act in an advisory capacity in all other matters brought to it by the Chairman.

Section 5—The officers of the Division shall be a Chairman, a Vice-Chairman, a Secretary, and a Treasurer.

(1) The terms of office shall normally be one year, beginning one month after their election at any annual meeting.

(2) Whenever an annual meeting of the national organization is held on the Pacific Coast, the currently elected Division officers shall serve for a second year without re-election.

Section 6—The officers shall perform the usual duties of such offices.

(1) The Chairman shall preside at annual meetings and be generally responsible for the activities of the Pacific Division. He may delegate

responsibility through the appointment of such committees as he deems desirable. He shall, as Second Vice-President of the national organization, act as liaison with the officers and the Executive Council of the parent body, either personally or through the Division Secretary.

(2) The Vice-Chairman shall act for the Chairman if the latter is unable to serve and shall assist the Chairman on request.

(3) The Secretary shall take all minutes of business and board meetings, transcribe them as promptly as possible, and transmit a copy to the Chairman for review. The Secretary shall also take such notes during annual meetings as may be appropriate, obtain abstracts of papers presented at annual meetings, prepare an annual report of the Pacific Division meeting, and submit this report to the Chairman for review. Upon approval, this report shall be transmitted by the Secretary to the national Secretary-Treasurer for inclusion in the AMU annual report. The Secretary shall also handle all necessary correspondence, as directed by the Chairman or as otherwise required, keep the other members of the Executive Board informed on matters that should concern them, and maintain the records of the Division.

(4) The Treasurer shall be responsible for handling and recording all funds of the Pacific Division, including the per capita dues allowance from the Secretary-Treasurer of the parent organization. He shall receive such national AMU dues from new or regular members as may come to him and shall forward them promptly to the AMU Secretary-Treasurer. Within one month after the annual meeting, he shall submit an annual report to the newly elected Chairman; this report is to be presented for approval before the next Executive Board meeting and the annual business meeting. He shall maintain an up-to-date list of the AMU members living west of the Rocky Mountains who are in good standing and shall keep the Secretary informed of the current status of this list.

Section 7—Officer candidates shall be nominated by a Nominations Committee of three appointed by the Chairman from the list of past Chairmen of the Pacific Division. The Committee shall present its slate of nominations at the annual business meeting. If there is more than one candidate for an office, a straight majority vote on written ballot will determine election.

(1) No candidates shall be nominated without prior consultation as to their willingness to serve.

(2) Membership in good standing in the American Malacological Union for a period of not less than two immediately prior years and residence west of the Rocky Mountains shall be required for eligibility as officer candidates.

Article III

A proposal to amend or repeal any by-law must bear the signatures of at least ten AMU members of the Pacific Division in good standing. The signed proposal must be submitted to the Executive Board at least two months before the annual meeting for verification of its constitutionality. It may be discussed at the subsequent annual meeting, but its adoption requires a two-thirds majority affirmative vote of the members present at the annual meeting the next year following its proposal.

NEWS, NOTES AND NOTICES

The 1960 AMU meeting will be held August 9-12 at Redpath Museum, McGill University, Montreal, Canada. Rates for dormitory accommodations together with all details will be mailed to members early in May; anyone desiring prior information may contact Dr. Katherine Van Winkle Palmer or the AMU secretary.

* * * *

The following letter was received on July 11, 1959 from Dr. Paul Bartsch:

> "Dear Mrs. Teskey, your letter informing me that the American Malacological Union has made me Honorary Life President gave me great pleasure and I wish you would express in the next publication of your office my appreciation for the honor thus conferred. Dr. Parker and I are both looking forward to the meeting in Montreal and we hope to be able to attend."

Both Dr. Ralph Arnold and Dr. Julia Gardner have been quite ill, but letters were received from their respective secretaries expressing pleasure at having been made Honorary Life Members.

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"Look pleasant, please!" The photographer must have prefaced his traditional request with a real rouser, judging from the wide smiles worn by most of the Pacific Division members in the group photograph on page 50.

* * * *

Trees have come in for a fair share of attention at past meetings. Fond memories are recalled of the pines about Rockland, Maine, and of those which sigh above Asilomar. The hotel at Cambridge, Massachusetts, which housed those who attended the 1954 meeting, occupies the site of the famed Washington Elm, and a flowering mimosa tree enchanted all who passed beneath it at Wagner College on Staten Island. Massive elms are all about the University of New Hampshire and the old, old campus at Yale.

The campus of Haverford College is deeply shaded by a variety of century-old trees, many of great size and one in particular of especial interest to Dr. Joshua L. Baily. "My grandfather (whose name I bear) planted that elm," said he. "It was a scion of a tree in the yard of the Twelfth Street Meeting House in Philadelphia, which in turn was a scion of the Treaty Elm beneath which William Penn is alleged to have signed his famous treaty with the Delaware Indians."

* * * *

The AMU lost the first life member with the death in November of Mr. Z. W. Craine. Mrs. Craine is well known in malacological circles, having in recent years attended most of the meetings on both coasts.

THE THIRTEENTH ANNUAL MEETING, AMU-Pacific Division, will be held at Asilomar (Pacific Grove, near Monterey, California), June 22-25, 1960. $25 to $35 will provide lodging, all meals and registration. Early reservations are necessary and should be addressed to Mrs. Lucille Zellers, 714 Elm Street, El Cerrito, California. Further details will be mailed all AMU-PD members soon after January 1, 1960; others desiring information should send stamped (8c) large envelope with their request. Asilomar can accommodate over 300, so everybody come!

RUDOLF STOHLER, *Chairman*
AMU - Pacific Division

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Since the AMU secretary did not make the field trip to Cape May, the account of that event was gleaned from the letters of Anthony D'Attilio, Mary Wheeler and Catherine Adhers. To the latter also goes credit for reporting most of the discussion which followed the scientific papers. M.C.T.

RECENT ACTIVITIES OF AFFILIATED SHELL CLUBS

PACIFIC SHELL CLUB, S. Ralph Hall, President: The Pacific Shell Club of Los Angeles held eight monthly meetings from October to May, each packed with interesting discussion, pictures, reports and field trips, as follows:

Hawaii and Shells, Howard R. Hill and Clifton S. Weaver (report on diving and other collecting plus display of Hawaiian shells and color slides with special emphasis on endemic cowries); field trip to Point Fermin, San Pedro; South Sea Islands, by Ralph Kettenring, Alma Van Velzer and Mrs. William Dunlap (each of these club members has lived in the islands of the South Pacific and brought shells, native crafts and color slides to illustrate their talks); field trip to Aldrich Museum, Balboa; Marine Collecting at Cholla Bay, Mexico, a full length color-sound movie, years in the making; The Lovely Family of Harp Shells, Crawford Cate and Homer King (featuring a complete display of the Harpidae less one fossil species); Cypraea, by Crawford N. Cate (a fine display of *Cypraea* and discussion of classification); Collecting in the Sea of Cortez, Dr. Ross Hardy (wonderful slides of beaches, living mollusks and shell display); Collecting and Preparation of Crucstacea, Fred Mucke (illustrated by specimens); Invasion of the Giant African Snail, *Achatina,* S. Ralph Hall (history and account of the activity of this voracious land snail); A Whale of a Story, Captain John Olguin (history of the Cabrillo Beach Museum, its activities, its future. Highlight of talk was exciting living demonstration of the miracle of the grunion egg, each person seeing them actually come to life and swim in the jar in his own hands!); annual picnic, annual shell competition with awards contributed by Mr. and Mrs. Crawford Cate; finally, color movies as follows: "Australia's Great Barrier Reef; Glamorous Fishes of Hawaiian Islands; poisonous Conidae Killing and Eating Prey.

We have 101 members, many of them young people and the remainder young at heart. Our officers:

President, S. Ralph Hall; Vice-President, Arnold Johnson; Treasurer, Isaac Cowgill; Recording Secretary, Mrs. S. Ralph Hall; Corresponding Secretary, Mrs. James Leyh; Museum Sponsor, Dr. Howard R. Hill.

PALM BEACH COUNTY SHELL CLUB, Suzanne McGregor, Corresponding Secretary: Our club was organized December 5, 1958, meets the first Friday of each month in the Strait Museum in Lake Worth. Officers: President, Mrs. Ward Brown; Vice-President, Mrs. Guy Phelps; Secretary, Mrs. Virginia King; Corresponding Secretary, Mrs. David McGregor; Treasurer, Mr. Jack Schmidt; Program Chairman, Mrs. Ted Lee.

We have fifty active members. Regular meetings with interesting programs are presented by members and guest speakers. Field trips are held once each month. Several SCUBA users have given interesting talks and displayed their catches. Program Chairman Mrs. Ted Lee arranged a very successful auction of shells donated by members. We hope to initiate a program in local schools to interest young people in conchology.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: The Long Beach Shell Club will celebrate its 20th anniversary in November, 1959. Mrs. Eugene Wilkins, Mrs. Helen Johnson, Mrs. Claud Lehman and Mrs. Ralph Bormann were instrumental in founding the club, and held the organization meeting at the home of Miss Julia Rogers, asking her to sponsor the club, which she agreed to do.

The Bakers, Barnetts, Burches, Chaces, Ulrichs and many others attended the first meeting and have helped to keep the group together throughout the years. We have nine regular meetings each year plus a Christmas party (gift exchange of shells) and an annual picnic. Recently we held a shell auction at the home of Mr. and Mrs. Edward P. Baker in Downey, a great success plus an interesting inspection of the small museum the Bakers maintain. Besides shells many Indian relics are on display. Another annual feature is the small directory listing members and their friends.

We meet the second Sunday of the month at the Long Beach Y.M.C.A. and visitors are always welcome. 1959 officers: President, Edward P. Baker; Vice-President, Charlotte Shuman; Secretary-Treasurer, Ralph Bormann; Historian, Mary Bormann; Librarian, Mrs. Eugene Welkins.

NORTH CAROLINA SHELL CLUB, Hugh J. Porter, Secretary: The North Carolina Shell Club now in its third year has a membership of about 158 junior and senior members. Membership is open to any persons in North Carolina interested in the collection or the study of mollusks. Meetings are held quarterly in the state depending upon the wishes of the club.

Three meetings have been held this past year with a fourth coming up in October. At the December meeting in Durham, N. C., members were guests of the Zoology Department of Duke University. During the meeting the group heard talks by Rev. G. Scott Turner on "North Carolina Shells" and by Dr. Harry W. Wells on "The Life History and Habits of Odostomia." At the conclusion of the meeting the group visited the home of Dr. B. W. Fassett to inspect his well known shell collection. March and May meetings were devoted to collecting in Nags Head and in Kure Beach, N. C. During these weekend meetings opportunities were provided for exchange or purchase of shells. Also at the Kure Beach meeting the shell collections of several of the club members were viewed. Arrangements at the beaches provided boat and jeep transportation to visit the more inaccessible beaches. The collecting, though not too good in some locations, was enjoyed by all. October's meeting, also a collecting meeting, will be held at Surf City on Topsail Beach, N. C.

Officers for 1959 as elected in the December meeting are as follows: President, G. Scott Turner; Vice-President, James Wadsworth; Secretary-Treasurer, Miss Roberta E. Lytle; Member of Executive Committee, E. M. Walker. Mr. E. M. Walker resigned his position in March due to ill health and was replaced by Mr. Harry T. Davis. Miss Roberta E. Lytle served as Secretary-Treasurer until May when due to business pressure she found it necessary to resign.

BOSTON MALACOLOGICAL CLUB, Mrs. Gladys McCallum, Secretary-Treasurer: Our club, organized in 1910, making it one of the oldest in the U. S., meets the first Tuesday evening of each month from October through May at the Museum of Comparative Zoölogy in Cambridge, Mass. Attendance at meetings is usually about thirty, including members and guests. Visitors are always welcome. Refreshments are served after the business meeting, at which time informal discussions are enjoyed.

The first meeting in the Fall of 1958 was "Behind The Scene at the M.C.Z. Mollusk Dept." We were privileged to view some of the vast collection stored in the Mollusk Dept. and took note of the methods of sorting, labeling and storing the shells. Our host and hostess were Dr. W. Clench and Dr. Ruth Turner, assisted by several graduate students. At subsequent meetings, Dr. Arthur G. Humes of Boston University spoke on "Mollusks and Their Crustacean Parasites"; Dr. E. Michaelson of the Harvard School of Public Health, "The Effect of Medical Malacology on Malacology"; Mr. Arthur H. Clarke, Jr., a Boston Club member, who is also on the staff of the Lamont Observatory, presented a most interesting account of "The 'Vema' *Neopilina* Expedition to the Southeastern Pacific." Mr. Clarke had taken some excellent colored slides of this adventure, which he showed. The expedition was successful in dredging four specimens of *Neopilina,* several of which we were able to see. Until recently, this limpet-like mollusk was thought to have died out over 300 million years ago. At a later meeting, Mr. Richard I. Johnson spoke on "Conchologists of the American Exploring Expeditions." Mr. Johnson had several old books with beautifully detailed, colored plates of mollusk studies made on these early expeditions. Early in 1959, Mr. Arthur Merrill from the Woods Hole Fish and Wildlife Laboratory presented an illustrated talk on "New England Sea Scallop Fishery"; Mr. Percy A. Morris of the Peabody Museum, Yale University, "Ancestral Mollusks"—dealing with the fossilized remains of ancient mollusks; Mr. Richard W. Foster, "Collecting in the Lesser Antilles."

After having been sandblasted and frozen off the New England beaches on our annual outings for the past several years, it was deemed advisable to attempt a fresh water collecting expedition this spring. We met at the home of Mr. and Mrs. R. W. Foster in Wayland, Mass., and although the weather wasn't at its best, the collecting proved to be quite prolific in nearby streams and ponds.

The following officers were elected for 1959-1960: Dr. Edward Michaelson, President; Mr. Richard W. Foster, Vice-President; Mrs. Gladys McCallum, Secretary-Treasurer; Dr. Henry D. Russell and Miss Dorothy Culligan, Counselors-at-Large.

ST. PETERSBURG SHELL CLUB, Gertrude E. Brakefield, Corresponding Secretary: The St. Petersburg Shell Club met in the Assembly Room in the City Hall for nine of the ten meetings of the past season. The Christmas party and shell exchange was held at the St. Petersburg Historical Society Museum where the group was graciously entertained by the curator, Mrs. Oma Cross, and the annual picnic was held at Mullett Key.

Instructive and entertaining features enjoyed during the year were: Source of Information on Shells and Shell Craft, Miss Gertrude M. Weber; Malacology as a Natural Science, Illustrations of Dissection and Radula Extraction, Alger P. Blaine; Scientific Information for the Advanced Student Malacologist, Dan Steger; How to Clean and Prepare Shells for Shell

Show, Frank Lantier; Pliocene Shells and Their History, Edna Marcott; Slides of Living Mollusks, Ted and Florence Kuczynski; Where and How to Find Shells, Roger V. Dunn; History, Highlights and Personalities of the Shell Club, Miss Edna Haas; an interesting talk on Alaska by Mr. W. R. Olsen, a lapidarist. Dan Steger illustrated with colored slides his discussions of the predominant shell families to be found in Florida waters, a feature of each regular meeting.

Miss Gertrude Weber gave of her time and talent to conduct classes in shellcraft for the handicapped children at the Nina Harris School. The frequent winter field trips conducted by Alger Blaine were better attended than ever before.

The annual shell show in 1959 consisted of about forty exhibits which were judged by Dr. Harald A. Rehder, Mr. Ralph Drury, Mr. Willard Mohorter, Mrs. Arthur Lawson and Mr. A. W. Fahenbruck. Mr. George E. Dunn received the coveted Smithsonian Institution Award for his collection of Strombidae.

Officers for 1959-1960: President, Francis A. Smith; Vice-President, Percy A. Slinn, 2nd Vice-President, Dorothy Hanssler; Treasurer, Roger V. Dunn; Recording Secretary, Barbara Steger; Corresponding Secretary, Gertrude Brakefield.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, John E. Fitch, Secretary: This year's officers were Dr. Donald R. Shasky, President; Crawford N. Cate, Vice-President; John E. Fitch, Secretary, and Homer P. King, Treasurer. Membership increased to about 90, including four honoraries. Meetings were held at 7:30 p.m. on the first Tuesday of each month and all but two were at the Los Angeles County Museum. Dues are still only fifty cents a year. Minutes of the Conchological Club are published privately by John Q. Burch and can be obtained from him by subscription for $2.50 per year.

During 1959, we had a varied and highly interesting series of meetings. Our guest speakers included Dr. Willis P. Popenoe, Geology Dept., U.C.L.A. (U.C.L.A.'s Approach to Conchology); Dr. Richard Boolootian, Zoology Dept., U.C.L.A. (The Sea Otter and Its Relation to Mollusks); Mr. David Leighton, Scripps Institution of Oceanography (Growth and Diet in the Black Abalone); Mr. Conrad Limbaugh, Scripps Institution of Oceanography (Clipperton, Almost Atoll of the Eastern Pacific); Dr. Alan Solem, Curator of Mollusks, Chicago Natural History Museum (A Malacologist in Panama); Mr. John E. Fitch, research director, Calif. State Fisheries Lab. (Shell Characters of Juvenile Californian Abalones); Mr. Clifton Weaver, Honolulu (Deep Water Shelling in Hawaii); Kenneth Norris, Curator, Marineland of the Pacific (Octopus); Mr. A. M. Olsen, Tasmanian Regional Laboratory (The Tasmanian Scallop Fishery); Mrs. Lovella Saul, Geology Department, U.C.L.A. (Paleontological Collecting).

One to several lovely shell displays were set up at each meeting, many from the fine collection of the Crawford N. Cates.

The constitution was dusted off, revised and brought up-to-date and the Lost Operculum Club was reactivated. Many members entered their various giant shells into competition in the Lost Operculum Club and a list of all entries was mimeographed and distributed by the John Q. Burches.

Many of the members had opportunities for shell collecting during vacations, business trips and such. Among the places visited were the Gulf of California (numerous members); Florida and the Atlantic seaboard (several members); Hawaii (several members); Canton Island and other South Pacific paradise spots (one member).

All told, more than 140 different people came to one or more of our meetings this year. Our average attendance was just over 50. At the halfway mark 21 members had perfect records; however, most of these had missed at least one meeting before year's end rolled around.

GREATER ST. LOUIS SHELL CLUB, Vaunita B. Haid, Recording Secretary: At the October, 1958 meeting the following officers were elected to serve during 1959: President, Mrs. Charles Lewis; Vice-President, Ernst Brauner; Corresponding Secretary, Mrs. Winton Barker; Recording Secretary, Mrs. Lloyd Orr Haid; Publicity Chairman, Mrs. Robert Casey; Assistant Publicity Chairman, Mrs. Frances Bartlett.

One of the highlights of the 1959 season was a collection of shells donated by members for a shell auction. $133.50 realized from this auction was donated to the recently-organized St. Louis Academy of Science. An additional fund of $50 realized from club member dues was donated to the Pilsbry Memorial Library of the Philadelphia Academy of Science.

The President, Mrs. Charles Lewis, accompanied by her sister, Miss Estelle Windhorst, was again a delegate to the June meeting of the AMU at Philadelphia; they returned with a glowing report of the enlightening nature of this meeting as well as the hospitality of the host Philadelphia Shell Club.

Although ours is an inland club, it is our sincere hope that St. Louis may be selected to host the AMU meeting in the not-too-distant future.

GREATER BALTIMORE SHELL CLUB, Mary Ruth Buchness, Secretary: Now in its third year, the club has about thirty members. Most of the meetings were held at the Natural History Society of Maryland with which the shell club is associated.

Officers for 1959: President, William F. Seip; Vice-President, Letha S. Allen; Secretary-Treasurer, Mary Ruth Buchness.

Among the various activities of the club over the past year were lectures, viewing of private collections, discussions of books, pamphlets and shell lists, shell identification and continued organization of the shell collection at the Natural History Society of Maryland. A major project of the club has been the organization of an exhibit of North American seashells to be set up at the Maryland House in Druid Hill Park in Baltimore. A group of members attended the AMU meetings in Philadelphia in July. The principal guest speaker of the year was Dr. R. Tucker Abbott of Philadelphia who lectured on Collecting in the Philippine Islands.

Continuing its project to enlarge the book collection of the library of the Department of Mollusks at the Natural History Society, the shell club purchased Keen's "Seashells of Tropical West America."

Outstanding accomplishments of two young members should be noted: Wayne Grimm was the second prize winner in the 18th annual Westinghouse Science Talent Search in March, 1959. His winning study was of the snail population of the Susquehanna Valley in Maryland. Miss Carole Ann Supp appeared on WMAR television in January, displaying some of her seashell collection on the program "Working Wonders."

PHILADELPHIA SHELL CLUB, Robert J. L. Wagner, Secretary: The Philadelphia Shell Club has now completed four years and continues actively as the center for amateur as well as professional conchologists in this area; membership, 206.

Once again we were honored by two out-of-town speakers, Dr. William J. Clench of Harvard and Mr. Crawford N. Cate of Los Angeles, California. Dr. R. Tucker Abbott and Mr. John du Pont presented slides and movies of their 1958 expedition to the Philippines, and Miss Virginia Orr gave an illustrated talk on her collecting trip to Broome, N. W. Australia. Dr. H. B. Baker spoke on the Dispersal of Land Mollusks, and Mr. John Dyas Parker gave an account in two parts on Early Naturalists of the Academy. Another club member, Bob Sidell, gave an illustrated talk on his collecting trip to the Virgin Islands, and the annual donation-auction netted the club treasury $568.

The Philadelphia Shell Club was host to the twenty-fifth annual meeting of the American Malacological Union June 30 to July 3. The meetings were held at nearby Haverford College; this was a very ambitious undertaking for a young shell club but everyone who attended can attest to the grand program developed by our own Dr. R. Tucker Abbott, 1958 President of the AMU.

The 1959-1960 officers were elected at the May meeting: President, John Dyas Parker; Vice-President, Leonard Richardson; Secretary-Treasurer, Robert J. L. Wagner; Historian, Virginia Orr; Editor, R. Tucker Abbott; Councillors-at-Large, Ruth Ostheimer, Robert Siddell and Warner Over.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Mrs. Howard Roeller, Secretary: Our club has many claims to fame. It is the oldest shell club in the country (62 years), has the smallest membership (dubious distinction), bears the longest name (count letters) and has the greatest enthusiasm (who can dispute it?). Honorary President Annie Cureton St. John Hoffman is a charter member and at 89 makes her annual junket to warmer climes.

We feel a very close link with the American Malacological Union since our former President, the late Imogene Robertson, was for many years the Secretary and guiding spirit of that organization, the present Secretary maintains her membership in our club and the AMU bulletin is printed here at the Buffalo Museum of Science where we meet and of which the Conchological Section is an integral part.

We lost one of our long-time members when Mrs. Eugene Schmeck passed away early this year. Mr. Schmeck lives in Niagara Falls but manages to attend many of our meetings and he also attended the recent AMU meeting in Philadelphia. Both he and Mrs. Hoffman are charter AMU members.

All Winter meetings are held in the Buffalo Museum of Science, but during the Spring and Fall we meet at the homes of members where prepared papers are delivered and treasured old or new shells are exhibited and discussed. Several new members have joined our group bringing new interest and activities, and already the program committee is hard at work drafting a schedule for the coming year.

Officers: President, Eugene Musial; Vice-President, Alice Gary; Secretary, Mrs. Howard Roeller; Treasurer, Louise Becker.

NEW YORK SHELL CLUB, Catherine Ahders, Secretary: Since our annual elections in February, we have been under the leadership of a new set of officers: Mr. George Jacobs, President; Josephine Wichern, Vice-President; Mathilde Weingartner, Treasurer; Grace McDougall, Corresponding Secretary, and Catherine Ahders, Recording Secretary. Mr. M. K. Jacobson has continued as Editor of our lively *New York Shell Club Notes.*

Our meetings are held on the last Sunday of September and October and on the first Sunday of the month from December to June, in the American Museum of Natural History, at 2 P.M.

This April we celebrated our tenth birthday with the appropriate refreshments at our annual auction. Our latest tabulations of membership show that we have grown from nine charter members to the present totals of 82 active, 29 corresponding, 15 exchange, 2 life, and one honorary member.

During the year we were entertained and edified by two guest speakers: Dr. Ruth Turner spoke on her trip to the British Isles and the collection at the British Museum (Natural History), while Dr. Tucker Abbott gave an illustrated lecture on his recent collecting trip to the Philippines. Our own members also made us wiser shell-wise. Dr. Walter Jacobs discussed the background on Poe's manual of conchology (which he later put up for sale in our auction) and Mr. George Jacobs presented a convincing demonstration of "Glamorous Bivalves." Mrs. Morgan, Mr. and Mrs. Raeihle, and Dr. Dodd reported on their respective trips to the Virgin Islands, Florida, and around the world. The "Question Box" and the "Shell of the Month" continue to be popular features of the monthly meetings, and at the last two meetings we held identification clinics before the business section of our meetings.

Among the more significant purchases of the past year were a much-needed Elliott addressograph and club stationery with *Busycon canaliculatum,* drawn by our own Mr. D'Attilio, as our emblem.

Activities, other than meetings, this year included an exhibit at a branch of the New York Public Library which raised much interest among the visitors, a privately run auction of over 1000 shells by one of our members, Mr. Nick Katsaras, and our annual field trip which was taken to Staten Island in a successful search for *Epitonium rupicola.*

Our plans for 1959-60 promise an even more interesting and active year than the year just past—if that is possible.

HAWAIIAN MALACOLOGICAL SOCIETY, Mrs. Arch Harrison, Corresponding Secretary: The Hawaiian Malacological has been a growing concern during the past year under the presidency of Mr. Bobby Lee, with one hundred local, and two hundred and twenty-seven "mailing members" to date. The biggest event of the year was our Second Annual Shell Fair held for two weeks last February at the Aquarium. We are very proud of the exhibit of Hawaiian Cypraes by Dr. C. M. Burgess, which received the Smithsonian Award. The other exhibit that drew many viewers were the living shells shown by a group of collectors.

The other big news from here (besides, of course, Statehood) is the extensive dredging operation that a small group has been conducting off and on since last March. A number of new cones have been brought up, and it is hoped that a complete list will be published when there has been sufficient time for study and record-organization. From material brought up a complete study collection will be presented to the Bishop Museum.

In July the Club held a field trip; nothing unusual was found, but everyone had a lot of fun.

For our August meeting we had an interesting account of shelling in the lower Gulf of California by Dr. Homer P. King, immediate past-president of the Concological Club of Southern California.

The October meeting will be an auction of shells; and in December we will round out the year with a dinner meeting at which time the new officers will be installed.

SAN ANTONIO SHELL CLUB, Mrs. Betsy Mahavier, Jr., President: Officers for the coming year: President, Mrs. W. E. Mahavier, Jr.; Vice-President, Mrs. Laura Gilbert; Secretary, Mrs. Edward Halbadier; Treasurer, Mrs. Duane Mellor; Editor, Mrs. Frank Whitehead; Publicity, Duane Mellor.

Membership year runs from September to September, dues are $2 per year for regular members, $1 for associate or out-of-town members; dues include publications which are quarterly. Meetings are held the fourth Monday of each month in the Laurel Heights Methodist Church.

During the past year members have shown their shells at numerous public exhibits, made two group field trips as well as many individual trips. We are still attempting to prepare a check list of Bexar County freshwater mollusks and more study cases of marine mollusks for the local schools. Members are interested in trading shells with members of other clubs, and one of our group (Mrs. W. E. Mahavier, Sr.) is a distributor for a Japanese shell dealer; she has very beautiful shells at very low prices.

We are all most interested in hearing about the activities of other shell clubs around the world.

ADDITIONAL AMU-AFFILIATED SHELL CLUBS

COASTAL BEND SHELL CLUB, Corpus Christi, Texas

CONNECTICUT SHELL CLUB, New Haven, Connecticut

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Berkeley, California

SACRAMENTO VALLEY CONCHOLOGICAL SOCIETY, Carmichael, California

HONORARY LIFE MEMBERS

Dr. H. B. Baker
Dr. Joseph C. Bequaert
Dr. Julia Gardner
Dr. Ralph Arnold
Dr. S. Stillman Berry

HONORARY LIFE PRESIDENT

Dr. Paul Bartsch

ACTIVE MEMBERS

[Membership List Revised November 15, 1959]

Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.

Abbott, Mr. and Mrs. Temple, 5 Arthur's Round Table, Wynnewood, Penn.

Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.

Ahders, Catherine, 125 W. 76th St., New York 23, N. Y. East coast shells.

Ahern, Mrs. Thos. S., 8747 Brandt, Detroit 4, Mich.

Akers, Mrs. Frank G., Box 133, Naples, Florida.

Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.

Alexander, Mrs. Robt., 8542 Lemon Ave., La Mesa, Calif.

Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.

Allen, Dr. J. Frances, 5702 Queen's Chapel Rd., W. Hyattsville, Md.

Allen, Miss Letha S., 107 W. 29th St., Baltimore 18, Md. All shells.

Allison, Edwin C., Dept. Paleontology, U. of Calif., Berkeley 4, Calif. Fossil, recent and mega-micro marine invertebrates.

American Assn. Advancement Science, 1515 Massachusetts Ave., Washington 5, D. C.

Ames, Margaret Dale, 17 East 89th St., New York City.

Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago de Chapultepec, Mexico D. F.

Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. Pecten, Murex.

Arias, Sergio, M.D., Apartado 681, Caracas, Venezuela. (Land, f.w. mollusks of the neotropical region.)

Armstrong, Mrs. Eliot, 608 Lafayette Ave., Buffalo 22, N. Y.

Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y

Athearn, Herbert D., R.F.D. No. 5, Cleveland, Tenn. Fresh water mollusks.

Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. Land shells.

Atkinson, Mrs. Edw. W., 270 Orchard Lane, Columbus 14, Ohio. Atlantic coast marines; freshwater.

Atmus, Rudolph E., 239 Pease Rd., E. Longmeadow, Mass. Land snails, esp. *Polymita* and *Liguus.*

Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.

Awald, Clifford J.,162 Southwood Dr., Kenmore, N. Y.

Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.

Baker, E. P., 11619 Downey Ave., Downey, Calif. Exch. Pacific Coast shells.

Baker, Fredric C., Box 291, Nampa, Idaho. *Chitons.*

Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.

Baker, Nelson W., Santa Barbara Museum of Nat. Hist., Santa Barbara, Calif. General interest.

Balch, Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.

Barbosa, Frederico Simões, Caixa Postal 459, Recife, Pernambuco, Brazil. Freshwater snails.

Barry, Charles, Sta. 16, Apra Hts., Agana, Guam. *Cypraea.*

Bartsch, Dr. Paul, Smithsonian Institution, U. S. National Museum, Washington 25, D.C. Residence, "Lebanon," Gunston Hall Rd., Lorton, Va.

Basch, Dr. Paul F., Dept. Biology, Kansas State Teachers College, Emporia, Kansas. (f.w. pulmonates.)

Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. Exchange.

Bayer, Frederick M., Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.

Beaven, Dr. and Mrs. J. Mahlon, 175 W. Ridgewood Ave., Ridgewood, New Jersey. Amateurs; beautiful shells.

Beck, Mrs. R. G., El Patio Village, 4040 State St., Santa Barbara, Calif.
Becker, Mr. and Mrs. Albert F., 2157 Sunrise Dr., La Crosse, Wisc. (Mississippi River shells.)
Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Bedell, Mrs. Adele Koto, 1421 Roosevelt Ave., Beloit, Wisc.
Bell, Miss Vashti, 528 South Erie, Wichita 16, Kansas.
Bengston, Mrs. Geo., Rt. 4, Independence, Iowa. (Land, f.w. and fossils.)
Bequaert, Dr. Joseph C., Biology Dept., Univ. of Houston, Houston, Texas.
Berg, Dr. Clifford O., New York College of Agriculture, Cornell Univ., Ithaca, N. Y.
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Berson, Mrs. Hester J., 34 Broadway, Redwood City, Calif. Beginner.
Bippus, Alvin C., 2743 Sagamore Rd., Toledo 6, Ohio. Marine univalves.
Bissell, Mrs. Frances LaDue, 131 Morningside Dr., Milford, Conn.
Bixby, Mrs. H. M., Look See, Captiva, Florida.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Bodden, Mrs. John M., 15978 E. Cleveland 12, Ohio. (Tropical f.w. snails.)
Bolin, Mr. and Mrs. Bart, 8634 S. Friends Ave., Whittier, Calif. W. Coast marine gastropods.
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Gladys McCallum, Concord Rd., Westford, Mass.
Bradbury, Jack W., 2037 Miramar Drive, Balboa, Calif. Marine invertebrates.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Bradfield, Mrs. Jesse, Mt. Alto, Rome, Ga. (General collecting.)
Brakefield, Gertrude E., 3830 7th St., N., St. Petersburg, Fla. *Melongena.*
Bradley, John C., 469 Farmington Ave., Waterbury 10, Conn. Travel and collect.
Branson, Branley A., Dept. of Zool., Okla. State Univ., Stillwater, Okla. Southwestern gastropods and fishes.
Brewster, Miss Helen, 333 5th St., S., St. Petersburg 1, Fla.
Broadus, Jas. M., III, 3806 Old Shell Road, Mobile, Ala. (Gulf of Mexico species.)
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Brown, A. Thomas, Surf City, N. C.
Brown, Dorothy, 1451 N. Ofden Dr., Los Angeles 46, Calif. (Pectenidae.)
Brown, Walter, 218 Allison Ave., Park Ridge, Ill.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Bruce, Anthony, 90 Doat St., Buffalo 11, N. Y. Printer.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Bryan, Edwin H., Jr., Bishop Museum, Honolulu 17, Hawaii. Pacific biogeography and biobibliography.
Buerk, Minerva S., M.D., Bryn Mawr Med. Bldg., Bryn Mawr, Penn.
Burch, Dr. John Bayard, Museum of Zool., U. of Mich., Ann Arbor, Mich. (Land and f.w. mollusks.)
Burch, Mr. and Mrs. John Q., 4206 Halldale Ave., Los Angeles, Calif.
Burton, Helen A., 391 Adams St., Oakland 10, Calif.
Butler, R. B., 171 Main St., Matawan, N. J. Marines, Recent and fossil.

Cahoon, Ruth Mary, 1108 Fairfield St., Scranton, Penn.
Caribbean Shell Shop, P.O. Box 311, Sarasota, Fla. Commercial and specimen shells.
Carlisle, Mrs. E. G., Shelburne Museum, Inc., Shelburne, Vt.
Carlisle, Mrs. Mary, Swedesboro, N. J.
Carpenter, Mjr. Walter N., 7115 Healy Dr., Springfield 14, Va. Exchange, buy, sell.
Carriker, Dr. Melbourne R., Dept. of Zool., U. of N. C., Chapel Hill, N. Carolina. Morphology of drilling mechanism in gastropods; ecology.

Cartwright, Mrs. Jas. B., 4533 Park Ave., Memphis 17, Tenn. Atlantic and Gulf Coast shells.

Casey, Mrs. Robert. V., 1208 W. Big Bend, Kirkwood 22, Mo. Fla. W. coast shells.

Castellanos, Dr. Jóse R., Cia Editorial "El Mundo" S.A., Virtudes No. 257, Habana, Cuba.

Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Ave., Los Angeles 49, Calif. (Cypraea; Hawaiian mollusca.)

Chace, Mr. and Mrs. Emery P., 3446 Van Dyke Ave., San Diego 5, Calif.

Chamberlin, Dr. Lockwood J., 509 Franklin St., Alexandria, Va.

Champion, Dr. Merrill E., Museum of Comp. Zool., Cambridge 38, Mass.

Chandler, Mrs. Doris M., P.O. Box 621, Chatham, Mass. Winter: P.O. Box 3244, Ft. Myers Beach, Fla.

Cheever, Dr. Austin W., 464 Beacon St., Boston 15, Mass.

Chestnut, Dr. A. F., Inst. of Fisheries Research, Morehead City, N. C. Ecology of economic mollusks, taxonomy of pelecypods.

Chicoine, Martin J., 2013 New Hampshire Ave., NW, Washington 9, D. C.

Christensen, Carl, 408 Juniper Lane, Falls Church, Va. *Conus, Cypraea, Voluta.*

Church, Austin, Box 372, Trenton, Mich.

Ciarla, Otello, Rua Laurinda Santos Lobo, 311 Santa Theresa, Rio de Janeiro, Brazil.

Claar, Elmer A., Northfield, Ill. *Cypraea.*

Clarke, Arthur H., Jr., Dept. of Mollusks, National Museum of Canada, Ottawa, Canada.

Clarke, Dr. Rosemary, Music Dept., Univ. of Dubuque, Dubuque, Iowa. *Liguus.*

Clench, Dr. William J., Museum of Comp. Zool., Cambridge 38, Mass. Collect, exchange, buy.

Coastal Bend Shell Club, c/o Sec'ty Magaw, 634 Pennington, Corpus Christi, Texas.

Coats, Miss Ruth E., 1828½ S. Hill St., Oceanside, Calif.

Cohen, Marjorie, "The Barbizon," Lexington at 63rd, New York City 21.

Coleman, Mrs. Nellie, 5308 3rd Ave., So., St. Petersburg, Fla.

Collins, Henry H., Jr., 1200 Post Road, Scarsdale, N. Y.

Compitello, Mrs. Juliette, 399 St. John's Place, Brooklyn 38, N. Y.

Conchological Club of So. Calif., c/o E. P. Baker, 11619 Downey Ave., Downey, Calif.

Conchological Section, Buffalo Soc. Nat. Sci., c/o Mrs. Howard Roeller, Eden, N. Y.

Condé, Vincente, Redpath Museum, McGill Univ., Montreal, Canada.

Conkling, Joseph E., Box 264, Edgartown, Mass. Winter, 628 4th Ave., S., St. Petersburg, Fla. Collect, buy, exchange.

Connecticut Shell Club, Peabody Museum, New Haven, Conn.

Corbett, Wm. Phelps, 2939 Nelson St., Ft. Myers, Fla. Exch. rare *Cypraea, Oliva, Murex.*

Cornell University Library, Ithaca, N. Y.

Corwin, Warren, Royal Palm Hammock, P.O. Goodland, Fla. Buy and sell shells.

Cowles, Edward F., Jr., 12 Hillcrest Ave., New Rochelle, N. Y. Tropical marine shells; photography.

Craine, Mrs. Ruth A., 155 N. Broad St., Norwich, N. Y.

Cramer, Frances L., Life Science Dept., E. Los Angeles College, 5357 Brooklyn Ave., Los Angeles 22, Calif. (Ecology; conservation.)

Crant, Harold, The Shell Factory, P.O. Box 1231, Ft. Myers, Fla.

Crum, Mrs. Dan, 930 N.E. 23rd St., Crest Haven, Pompano Beach, Florida. *Conus; Voluta.*

Dafcik, Mr. and Mrs. Chas. J., Rt. 1, Box 364, Odenton, Md. Marine snails.

D'Amico, Joseph S., 9927 Drury Lane, Westchester, Ill.

Danforth, Miss Louise L., Box 415, Vineyard Haven, Mass. (New Eng. shells.)

Danik, Miss Gene B., 923 Lakeside Dr., Rahway, N. J. (Pacific, E. Indian and Australian gastropods.)

Darling, F. Murray, 3313 Achusnet Ave., New Bedford, Mass. Marine life.
D'Attilio, Anthony, 44 Lynwood Dr., Valley Stream, Long Is., N. Y.
Dawley, Dr. Charlotte, The Women's College, University of N. C., Greensboro, N. C.
DeLuca, Miss Gladys and Mrs. John A., 16 Oakland Ave., Wollaston 70, Mass.
Derr, Mr. and Mrs. John S., Jr., Dearbought, Rt. 1, Frederick, Md.
Desmond, Hon. Thomas C., P. O. 670, Newburgh, N. Y.
DeStefano, Dr. and Mrs. Fredrick, 55 W. Elizabeth, Brownsville, Texas. Gulf of Mexico shells.
DeWitt, Robt. M., Biol. Dept., Univ. of Fla., Gainsville, Fla.
Dexter, Dr. Ralph W., Dept. of Biology, Kent State Univ., P. O. Box 507, Kent, Ohio.
Di Domenico, Helen E., P.S. 154, 162 St. 75 Ave., Flushing, L. I., N. Y.
Dietrich, Mr. and Mrs. Louis E., 301 Veri Ave., Pittsburgh 20, Pa. Mollusks of the West Indies.
Dodd, William E., M.D., Ocean St. and Bay Ave., Beach Haven, N. Y.
Dodge, Henry, 6 Rochambeau Rd., Scarsdale, N. Y.
Donahue, Mrs. Enid P., La Hacienda, Sanibel, Fla. "See L. F. Cockerill's shells!"
Donahugh, Mrs. Jas. F. P., 38 Daris St., Beacon, N. Y.
Donnelly, John F. and Katherine, 131 E. 26th St., Holland, Mich.
Donovan, James W., 3718 Calvin Ave., West Palm Beach, Fla.
Drake, Robt. J., Dept. of Zool., Univ. of British Columbia, Vancouver 8, B. C., Canada.
Dreibelbis, Edwin H., 311 N. Brown St., Titusville, Pa. Worldwide shells, starfish.
Duarte, Eliseo, Casilla Correo 1401, Central, Montevideo, Uruguay. Exch. shells and information.
Dunav, Edward, Shell Art Novelty Co., 229 S. 9th St., Philadelphia 7, Penn. Sell; buy; exchange.
Dundee, Dr. Dolores, Tulane Univ., New Orleans, La. (Land mollusks, f.w. mussels.)
Dunn, Mr. and Mrs. Geo. E., 27th Ave., S., St. Petersburg 11, Fla.
Dunn, V. Roger, 5021 18th Ave., S., Gulfport, Fla. (*Conus.*)
Dvorak, Stanley J., 3856 W. 26th St., Chicago 23, Ill. Rare west Atlantic Muricidae.

Eaton, Miss Ruth E., 3333 Orange St., Riverside, Cal.
Echardt, Mary Jean, 35 Prospect Park West, Brooklyn 15, N. Y.
Eddy, Anne-Elizabeth, 125 So. Harrison St., East Orange, N. J.
Edmiston, Mrs. J. R., 50 Popham Rd., Scarsdale, N. Y.
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Schenck, Dr. Hubert G., Box 1528, Stanford, Calif.
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Schmidt, Dr. and Mrs. David, Rt. 1, Sarona, Wisc. *Melongena, Epitonium.*
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Schwengel, Dr. Jeanne S., Artillery Lane, Scarsdale, N. Y.
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Scribner, Mrs. Geo. K., Reserve St., Boonton, N. J. (Coll. and photograph shells.)
Scripps Institution of Oceanography, LaJolla, Calif.

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Seip, Wm. F., 1555 Stonewood Rd., Baltimore 12, Md. Fossil and Recent mollusks.
Seldomridge, Mrs. Clarice, Rt. 1, Box 258, Port Angeles, Wash.
Shasky, Dr. and Mrs. Donald R., 1466 E. Chevy Chase Dr., Glendale 6, Calif. (Tropical W. America sp. and muricidae.)
Shatkin, Laurence, 104 Franklin Ave., Long Branch, N. J.
Sheafer, Clinton W., P.O. Box 2194, Del Ray Beach, Fla. Conidae; Cassididae; Argonautidae.
Shelton, Lawrence A., P. O. Box 431, Battle Mountain, Nevada. (All shells.)
Shuman, Katherine M., 204 Ocean Ave., Seal Beach, Calif. (W. coast bivalves and chitons.)
Sibert, John, 209 Topaz St., Balboa Is., California. Nudibranchs; Cephalopods.
Sibley, Fredrick, 360 Beacon St., Boston 16, Mass. (Muricidae.)
Siekman, Mrs. Lulu B., Seaire Motel, 10048 Gulf Blvd., St. Petersburg, Fla.
Singleton, Mrs. J. L., 7240 No. Barnett Lane, Milwaukee 17, Wisc.
Skinner, Mr. and Mrs. Jas. L., 2391 Sunny Vista Dr., San Jose, Calif.
— Smith, Allyn G., 722 Santa Barbara Rd., Berkeley 7, Cal.
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Smith, Egbert T., 1313 First St., Fort Myers, Fla, Fort Myers Gift Shop.
Smith, Mrs. Elaine, 15 Meadow Way, Red Bank, N. J.
Smith, Gerald C., 4341 U St., Sacramento, Calif. *Cypraea.*
Smith, Mrs. Harrison, 1420 Girard Trust Bldg., 1400 Penn Sq., Philadelphia 2, Pa.
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Smith, Marjorie, 2069 W. Mountain St., Glendale 1, Calif. Marines.
Smith, Dr. Maxwell, P.O. Box 8295, Asheville, N. C.
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Solem, Dr. Alan, Chicago Nat. Hist. Museum, Chicago 5, Illinois.
Soper, Arthur W., Acmdy. of Nat. Sci., Philadelphia 3, Penn. (June-Sept., Greensboro, Vt.)
Sorensen, Andrew, 247 Granite St., Pacific Grove, Cal. Coll., west coast shells.
Spicer, Dr. and Mrs. V. D. P., 219 Downing, Centralia, Wash.
Sprague, Myrle A., 6040 Sutter St., Ventura, Calif.
Spring, C. E., 5252 Lochloy Dr., Minneapolis 24, Minn. Amateur; marines.
Stanford University Libraries, Stanford, Calif.
Stansbery, David H., Dept. Zool. and Entolmology, Ohio State Univ., Columbus 10, Ohio. Niades: taxonomy, distribution, ecology.
Stearns, Miss Dorothy, 1718 So. Bayshore Lane, Miami 45, Fla. Univalves.
Steen, Mrs. Mildred, 14460 S.W. 292 St., Homestead, Fla. (Worldwide shells.)
Steinberg, Joan Emily, 850 38th Ave., San Francisco 21. Opistobranchs.
Steinhoff, Mr. and Mrs. G. Lester, 2205 Sunrise Dr., La Crosse, Wisc.
Stenzel, Dr. H. B., 3726 Colquitt, Houston 27, Texas.
Sterry, Leland, 1200 Atlantic Ave., Delray Beach, Fla.
Stingley, Dale V., 4813 Middaugh Ave., Downers Grove, Ill. *Crepidula.*
Stocker, Armita L., 67 E. Sierra Way, Chula Vista, Calif. General interest.

Stohler, Dr. Rudolf, Dept. of Zool., U. of Calif., Berkeley, Calif.
Stotter, Roscoe O., 1046 Imperial Beach, Calif. Gulf of Calif. shells.
Strater, Mr. and Mrs. Edward L., Harrod's Creek, Kentucky.
Strohbeen, John P., 1135 King St., Santa Cruz, Cal.
Summers, Ray, P.O. Box 124, Petaluma, Calif. Cypraeidae.
Sutow, Wataru W., M.D., 3854 Palm St., Houston 4, Texas.
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Talmadge, Robt., Box 71, Willow Creek, Calif. Haliotidae and land mollusks.
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Taylor, Dr. Dwight W., 2425 Wyoming Ave., Washington 8, D. C.
Taylor, Mrs. Ernestine, 2502 Massachusetts, Tampa 3, Fla.
Taylor, Mrs. Wyllie, Center and East St., Roseville, Calif. (*Conus.*)
Teare, Mrs. Margaret, 12 Meadow View Place, Buffalo 14, N. Y.
Teskey, Margaret C., Rt. 2, Box 318, Marinette, Wisc. (Xenophoridae.)
Thaanum, Dr. D., 43 Coelho Way, Honolulu, T. H.
Thomas, Carl I., 474 N. Glassel St., Orange, Calif. West Coast shells.
Thomas, Miss Grace, Dept. of Zool., Univ. of Georgia, Athens, Ga. (Sphaeriids.)
Thomas, W. Donald, 464 Winchester St., Warrenton, Va.
Thompson, Dorothy H., Dellwood, White Bear Lake, Minn.
Thompson, Mrs. Louise, Sugar Bush Farm, Arlington, Vt.
Thomson, Miss Harriet W., 1895 Columbia St., Eugene, Ore. Marine fossils.
Thrane, Mrs. Rita J., 207 29th St., Hermosa Beach, Calif. Worldwide; exch.
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Townsend, Mrs. Ethel N., 3029 Oak Ave., Coconut Grove Sta., Miami, Fla. (*Murex, Conus, Pecten.*)
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Turner, Mrs. Doris, 1396 Merritt Dr., El Cajon, Calif. (General interest.)
Turner, Rev. G. Scott, Buies Creek, No. Car. Marine shells.
Turner, Dr. Ruth D., Museum of Comp. Zool., Cambridge 38, Mass.
Turver, Mr. and Mrs. H. R., 11672 No. 2nd St., Yucaipa, Calif.

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University of Maryland Library, College Park, Md.
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Valentine, Kimball, 2300 Mathieson Bldg., Baltimore 2, Md. Dredging.
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Van Felix, Mr. and Mrs. Henry, 104 18th St., Pass-a-Grill, Fla. Summer; Otisville, N. Y. General interest.
Van Woert, M. P., 1021 18th Ave., No., St. Petersburg 6, Fla.
Vasquez, Mrs. Raul, 629 Eaton St., Key West, Fla.
Vilas, Mrs. C. N., 53 W. Jackson Blvd., Chicago 4, Ill.
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Wachendorf, D. C., 3107 Park Ave., Brookfield, Ill.
Wagner, Robt. J. L., 1122 Westbury Rd., Jenkintown, Pa. (Purchase shells.)
Waldman, Mrs. Arthur, 212 Outlook, Youngstown, Ohio. Amateur.
Walter, Dr. Harold J., c/o University Museums, Ann Arbor, Mich.

Walter, Dr. Waldemar M., Dept. of Zool., State College of Washington, Pullman, Washington.

Walton, Munroe L., 1108 N. Central Ave., Glendale 2, Cal. Land snails.

Warmke, Germaine L., Federal Experiment Sta., Mayaguez, Puerto Rico.

Warren, Mr. and Mrs. Austin B., 63 So. Maple St., Westfield, Mass. (Florida shells.)

Wasili, Mr. and Mrs. John, P. O. Box 113, Frisco, No. Car.

Watkins, T. Edward, All America Cables & Radio, Salinas, Guayas, Ecuador.

Wayne, Dr. Wm. J., Ind. Geol. Survey, Bloomington, Indiana. (Pleistocene non-marine mollusks.)

Weaver, Clifton S., 1038 Mokulua Dr., Kailua, Oahu, Hawaii.

Webb, Glen R., Box 335, Everman, Texas.

Webb, J. H., 1 Edgemore Dr., Rochester 18, N. Y. Collect. exchange Pectenidae.

Weber, Misses Gertrude and Martha, 5450 Seventh Ave., N., St. Petersburg 10, Fla.

Weber, Jay, 10775 N.E. Bayshore Dr., Miami 38, Fla.

Wehringer, Henry G., M.D., 5617 N. Knox Ave., Chicago 46, Ill.

Weingartner, Mathilde P., 17 Amelia Court, Staten Island 10, N. Y.

Welch, Dr. d'Alte A., John Carroll University, University Heights, Cleveland 18, Ohio.

Wells, Dr. and Mrs. Harry W., Box 162, Buxton, N. Car. E. Coast marines.

Wells, Mrs. Miriam B., 474 Ray St., Freeport, N. Y.

West, Larry Joe, 1926 Aurelius Rd., Holt, Mich. Land f.w. mollusks.

Westerfield, Mrs. Asher L., 429 Montgomery Ave., Haverford, Pa. (Marine shells.)

Wheel, Adlai B., Pet Haven, West Seneca Turnpike, Syracuse, N. Y.

Wheeler, Mrs. A. Hunt, Rt. 1, Penn Yan, N. Y. (Everything!)

Whelchel, Mrs. A. T., 1735 McKenzie Ave., Fresno, Calif.

White, Wm. F. and Madeline, 181 Jules Dr., Staten Island 14, N. Y. Florida marine shells.

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Wilcox, LeRoy, Oceanic Duck Farm, Speonk, L. I., N. Y.

Wilie, Wm. L., Jr., 1405 McFaddid, Beaumont, Texas. *Conus.*

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Williamson, Mrs. F. B., Jr., Windy Brook Farm, New Hope, Pa. (Oct.-May, 2 South, Pt. Sewell, Stuart, Fla.)

Wilmott, George B., West Hurley, N. Y.

Wilson, Druid, Room 404, U. S. National Museum, Washington 25, D. C.

Winter, Mrs. Edwin, 959 E. Maplewood, Lake Forest, Ill.

Wisoff, Dr. and Mrs. Julius, 304 Beach 147th St., Neponsit, Long Island, N. Y.

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Wolfson, Mrs. Fay, 3336 Poe St., San Diego 6, Calif.

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Wooster, Joel T., North Haven, Maine. Local species.

Wooten, Mrs. Edw. F., 2539 Lullington Dr., Winston Salem, N. C.

Wrigley, Rev. G. K., c/o Church House, Cross Roads P.O., Jamaica, B.W.I.

Wurtz, Dr. Chas. B., 3247 Disston St., Philadelphia 49, Penn. (Terrestrial pulmonata.)

Young, Miss Catherine J., 1901 27th Ave., No., St. Petersburg, Fla. Pectinidae; Cymatiidae; Muricidae.

Zellers, Mrs. Lucille, 714 Elm St., El Cerrito 8, Calif. Gen. marine life.

CORRESPONDING MEMBERS

Altena, Dr. C. O. van Regteren, Rikjsmuseum van Natuurlijke Historie, Leiden, Netherlands. Limacidae, Arionidae.

Carlos, Diomedes R., Carlos Dept. Store, Lucena, Quezon, Philippines.

Coomans, Dr. H. E., Scientific Library, Drukkerijstraat 4, Curacao, Netherlands Antilles. (W. Indian marine mollusks.)

Feen - van Benthem Jutting, Mrs. W. S. S. van der, Zoologish Museum, Plantage Middenlaan 53, Amsterdam, Netherlands.

Franco, Dr. Asela B., Ramos and Mango Avenues, Cebu City, Philippines.

Gifford, Roy, 4 Powell St., Bowen, Queensland, Australia.

Grantier, Mrs. Bruce J., c/o Arabian-American Oil Co., Box 1545, Dhahran, Saudi Arabia. Persian Gulf shells.

Kile, Chas. O., Trust Territory, Pacific Islands, Yap, W. Carolines.

Lim, Ramon R., M.D., Cuyo, Palawan, Philippines. (All shells foreign to P. I.)

Holloway, Miss Mavis M., 32 Pentland Ave., Mt. Eden, Auckland S. 2, New Zealand.

Malacological Society of Australia, 351 Glenferrie Rd., Malvern, Melbourne, Australia.

McMichael, Dr. Donald F., Australian Museum, Sydney, Australia.

Miailhe, W-A Burke, 6 Place Vendome, Paris, France.

Ministry of Agriculture, Fisheries & Food, Fisheries Lab., Burnham-on-Crouch, Essex, England. Oysters and their pests; Buccinum; Mytilus; Cardium.

National Museum of Victoria, Russell St., Melbourne, Australia.

Netherlands Malacological Society, Nederlandse Malacologische Vereniging, Nieuwersluisstraat 67, The Hague, Netherlands.

Olivera, Baldomero, Jr., 22 Makilino, Cubao, Quezon City, Philippines. Philippine marine shells.

Oyama, Katura, Geol. Survey of Japan, Kawada-cho 8, P.O. Ichigaya, Tokyo, Japan. General malachology; phylogeny.

Pattison, George, 68 Partridge St., Glenelg, So. Australia.

Stevenson, A. G., Drury Hills Rd., Drury, S. Auckland, New Zealand.

Weyrauch, Dr. Wolfgang, Avda. Petit Thouars 1961, Lima, Peru. (S. A. land shells.)

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THE AMERICAN MALACOLOGICAL UNION

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The American Malacological Union
Pacific Division

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ANNUAL REPORTS
for 1960

Exc.: 2641

A. M. U., Twenty-seventh Annual Meeting
A. M. U., P. D., Thirteenth Annual Meeting

THE AMERICAN MALACOLOGICAL UNION

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The American Malacological Union
Pacific Division

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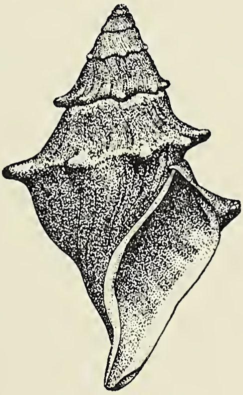
ANNUAL REPORTS
for 1960



A. M. U., Twenty-seventh Annual Meeting
A. M. U., P. D., Thirteenth Annual Meeting

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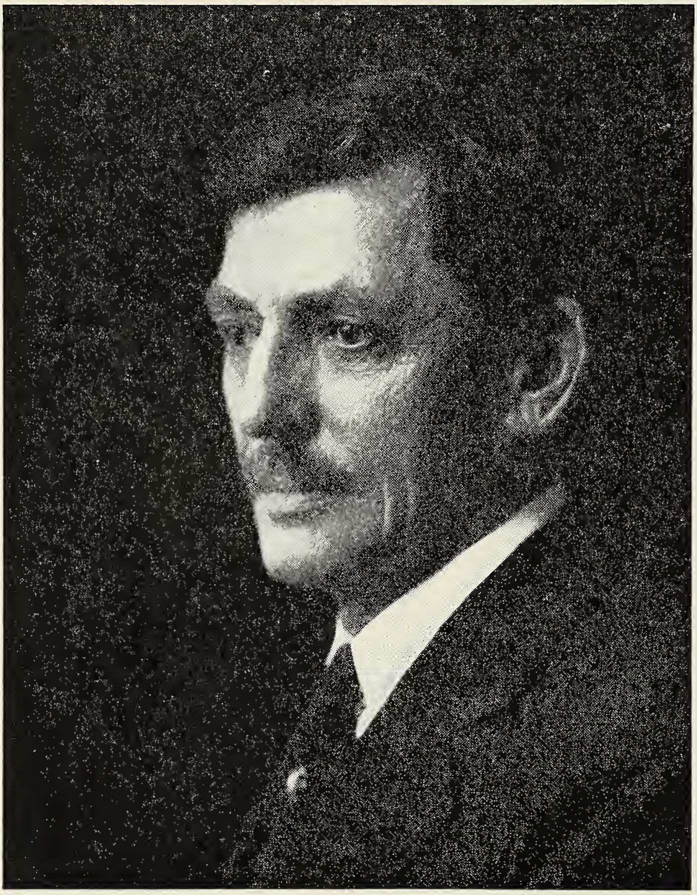

PAUL BARTSCH

1871-1960

The death of Dr. Bartsch on April 24, 1960 at Lebanon, his home in Lorton, Virginia, marked the end of an era in American malacology, for he was the last of those whose scientific activities spanned both the last and present century. One of the outstanding figures in our field, he was associated for fifty years with the Division of Mollusks of the U. S. National Museum, and was curator of this collection, probably the largest in the world, for 32 years. Most of its growth and present eminence as a research collection is due to his endeavors.

Paul Bartsch was born on August 14, 1871, in Tuntschendorf, Silesia, Germany (now in Poland), the son of Henry and Anna (Klein) Bartsch. At the age of 10 he came with his family to America, where they settled, first in Missouri, and then near Burlington, Iowa. Here, in the fields and riverbottoms near his home, he developed the interest in nature that was to stay with him throughout his life. At the University of Iowa he received encouragement and a broad basic training from excellent teachers.

On the recommendation of Professor C. C. Nutting, one of his teachers, Paul Bartsch came to Washington in April 1896 to serve as aid in the Division of Mollusks and assistant to Dr. William H. Dall. In June of that year he received his bachelor's degree, having finished his college work in three years. In 1899 the University awarded him his Master's degree, and in 1905 he received his Ph.D, his thesis dealing with the zoogeographic distribution of the East Pacific Pyramidellidae.

His first years in Washington were devoted to obtaining a basic grounding in malacology, doing most of the routine curatorial work together with Charles T. Simpson (who resigned in 1902), and assisting Dr. Dall in his research, especially on the Pyramidellidae. While continuing to write brief ornithological notes (his Master's thesis was on the birds of Iowa) his first publication on mollusks did not appear until 1902. From that date on an increasing number of papers on mollusks appeared from his pen, his earliest contributions dealing largely with the Pyramidellidae and the minute marine mollusks of the West Coast. He did not, however, lose his interest in ornithology, and throughout his life led thousands of students and interested adults on his famous early-morning bird walks. He was the first to do scientific birdbanding in this country, and during his last years his particular delight was in observing the succession of birds that came to the feeding places outside the picture windows of his study at Lebanon.

In 1905 he became assistant curator, and in 1914, curator, a position he retained until his retirement in 1946. He was not only an excellent curator and organizer, but during these years went on many field trips, bringing back huge collections. A tireless worker himself, he inspired others with him to work long and hard. Following earlier work at Lake Maxinkuckee, Indiana, (1905), and the Mississippi River (1907), he spent a year between 1907 and 1908 as naturalist on the Steamer Albatross in the Phillipines, gathering a vast amount of mollusks and other zoological material.

Aside from a trip to the Gulf of California in 1912, his later field trips were largely restricted to the West Indian region. Of these trips, the most extensive were the three that he made in 1928-1930, as holder of the Walter Rathbone Bacon scholarship, of the Smithsonian Institution. In the course of these trips he visited almost every island from Bimini to Trinidad and Curacao, bringing back an unparalleled quantity of land snails. Out of these West Indian trips came his contributions to our knowledge of the genus *Cerion,* and his monographs on the families Annulariidae and American Cyclophoridae. Much of his research on the last two groups was done jointly with his good friend, Don Carlos de la Torre, with whom he also prepared the as-yet-unpublished monograph of the Cuban Urocoptidae.

Other groups in which Dr. Bartsch made important contributions were the Pyramidellidae, the Teredinidae, and the land snails of the Philippines.

Paul Bartsch's activities in Washington extended well beyond the confines of the Smithsonian Institution. In 1899 he was asked to teach histology at the Medical School of Howard University, and for thirty-seven years he taught there, serving in later years as Director of the Histological and Physiological Laboratory. From 1900 to 1945 he taught evening classes in zoology at the George Washington University, retiring in 1945 as professor emeritus.

Other abiding interests that Dr. Bartsch had were the Boy Scouts, the conservation of our native fauna and flora, and the preservation of places of unspoiled natural beauty. One of the founders of the first Boy Scout troops in Washington, he became one of the active leaders in the movement in the Washington area. His love for nature and her creatures is epitomized in Lebanon, the beautiful place on Pohick Bay, on which he and his wife, Dr. Elizabeth Parker Bartsch, who survives him, spent so much devoted care.

HARALD A. REHDER

THE AMERICAN MALACOLOGICAL UNION

TWENTY-SEVENTH ANNUAL MEETING

AUGUST 9-12, 1960

McGill University, Montreal, Canada

In the heart of the lovely campus of McGill University stands the first especially designed museum building in Canada, the Redpath Museum. The building, dating from 1882, was an ideal place for the meeting of the American Malacological Union.

Historically it was most interesting for the nucleus of the museum was the private shell collection of Sir William Dawson who joined the staff of the then McGill College as professor of Natural Sciences. While Professor, and later as principal of the college, he added to the collection through field work, exchange and by acquiring other private collections. Among these was the mollusk collection of P. P. Carpenter, a famous and important collection particularly rich in our West Coast material. Dr. Katherine Van Winkle Palmer, the chairman, president of the American Malacological Union, has been working with this collection for many years and in 1958 published a detailed account of the life, work and type collections of Philip Pearsall Carpenter. Consequently it was particularly appropriate that the meetings should be held at McGill University at this time.

McGill University is located near the center of Montreal, Canada, on a spacious tree-shaded campus, the large tract of land having been given to the University by its founder, James McGill, a prosperous fur merchant. It is but a block from the business district so that between meetings the AMU members could enjoy the campus, visit some of the lovely stores, or take a sight-seeing tour in one of the charming little horse-drawn carriages that were lined up near the entrance to the campus.

Most of the members stayed at the Royal Victoria Dormitory, a large building with numerous lounges which made wonderful gathering places for small informal discussion groups.

Many people arrived at the dormitory during the evening of August 8th and the usual pre-meeting gatherings were enjoyed by these early comers. Registration began at 9:00 A.M. on Tuesday, August 9th at the Redpath Museum. After signing in, members enjoyed a special series of exhibits on mollusks which had been prepared for the entrance hall of the museum, then drifted upstairs to examine other exhibits or out onto the steps to sit in the sun and chat. Many took advantage of the few hours to do a bit of sight-seeing or shopping.

Dr. Palmer officially opened the 27th annual meeting promptly at 1:30 P.M. The meeting place, which was located at the far end of the first floor of the Redpath Museum, was a small amphitheater with steep banks of seats which brought the speaker and audience close together and gave an informal, intimate feeling to the proceedings as well as allowing everyone to hear and see easily. Dr. Palmer welcomed the 97 registered members of the AMU and the many guests. She announced with regret that Mrs. Margaret Teskey, our faithful AMU secretary, could not attend the meetings because of the death of her mother which had occurred the previous day. Thanks were extended to McGill University, and especially to the authorities of the Redpath Museum, for inviting the AMU to meet there, and particularly to Vincent Condé, Curator of Invertebrates at the Museum.

Dr. Palmer then introduced Mrs. Alice Turnham, Director of the McGill University Museums, who was also chairman of the local committee. Many of the members had already met Mrs. Turnham and felt the charm of her personality; the remainder were to become well aware of it, for her friendly helpful interest and that of her entire staff, prevailed throughout the meetings.

In her gracious address of welcome, Mrs. Turnham traced the chain of circumstances leading to the opening of the special exhibition of shells drawn entirely from the Carpenter collection, a feature scheduled for later in the day.

It was a fortunate day, said she, when in 1949 Mr. Lovell G. Mickles, a Montreal businessman, donated his own small collection of Cuban shells to the Redpath Museum. He subsequently became more and more interested in the museum and its extensive, though disorganized collection of shells, to the extent that not only has he financed and conducted a number of collecting trips to Cuba on behalf of the museum, but has donated many thousands of dollars which under the Mickles Malacological Project has been used to catalog, revise and rehabilitate the Redpath Museum shell collection. Mr. Mickles was responsible for persuading the Cuban malacologist Vincent Condé to accept the position of Curator of Invertebrate Zoology.

Another important link in the chain of circumstances which brought the American Malacological Union to Montreal in 1960 was the fact that a casual postcard bearing the words "Among other outstanding scientific collections, the Redpath Museum houses the Carpenter collection of shells" came to the notice of Katherine Palmer in 1944. Magic words indeed, for she surmised, and later verified, that in the collection which had lain in scientific obscurity for over sixty years was a gold mine of Carpenter type specimens.

Under the Mickles Malacological Project and on a number of visits, she worked for weeks at a time to the end that 40 long-forgotten type specimens were unearthed. Subsequent investigation has swelled this number to over 150—there is still the possibility that more will turn up. In the ten years that the Mickles Malacological Project has been in operation, Vincent Condé has with infinite patience, skill and knowledge, done monumental work in reorganizing the Carpenter collection.

"Ours is a relatively small museum with a fine basic collection on which increasing demands are being made, for there is no other scientific museum in Montreal. You find us at the start of an expanding programme with an enthusiastic staff eager to develop the Museum along modern lines. I take pleasure in welcoming you to McGill today; our own institution and the national body profit immeasurably by the stimulation of such groups as yours. May you have a most productive and enjoyable conference."

To this friendly welcome Katherine Palmer, President of the American

Malacological Union and speaking in behalf of her fellow members made the following reply:

"Twenty years ago last year the American Malacological Union met in Canada at Toronto. At that time there were 218 members. This year there are 719. It is now the proper time that the society came across the river again to break bread with its northern members. The sounds of the pleasant, enjoyable, and hospitable features of that former occasion have echoed through the years from the voices of those who attended. Those echoes have played around our thoughts and hopes until they ring again loud and clear. We do not say, "Lafayette, we are here." But we say, "Logan, Dawson, Carpenter, we are here!" We are here at Montreal equally because of the illustrious scientists of McGill University and Canadian surveys of the past as well as because of the worthy and splendid group of the University, the Canadian Museums and surveys of today. To natural history, geology in particular, the world is indebted to Canada and Montreal for the eminent Sir William Logan, Director of the Canadian Geological Survey 1842–1869. Spectacular are the fossil tracks *Climactichnites wilsoni* which he described and of which the huge slab is on the floor above in this museum for you to see. These tremendous trails were made in Upper Cambian time over 500,000,000 years ago by a crustacean or worm or perhaps by a mollusk. To Sir William Dawson, principal of McGill University 1855–1893, distinguished geologist, paleontologist, botanist and who with all described some of the earliest land shells. To Philip Pearsall Carpenter whom we particularly honor today because of his outstanding work on living mollusks. Carpenter said of his collection of shells to Dawson in 1865, soon after Carpenter's arrival in Montreal, "As it appears to me that McGill College is (of all places in British North America) the most likely to be a place for Natural History study, I am willing to present it to your museum." By the association of the work of such men do we have the interpretation and evidences of the continuity of life in time. We study the living animals and plants to interpret those of the past. But the facts we learn about those of the past add more fully to the history of the living. Living animals and plants did not spring spontaneously thousands of years ago. One may go back in time when it is difficult to say whether certain forms were fossil or were Recent. There is a term "sub-fossil" used for such preservation of specimens. Thus by the integration and cooperation of malacologist, conchologist, and paleontologist the study of mollusks will be more successfully advanced. Amateurs and scientists of basic and applied science form a team which will further this aim. The American Malacological Union has within its membership those who contribute in each of those fields."

She then introduced the first of four speakers who presented papers organized as "A Memorial Tribute to Philip Pearsal Carpenter":

CALIFORNIA ACADEMY OF SCIENCES. G. D. Hanna, L. G. Hertlein, and A. G. Smith. Read by Albert Mead.

The location of the present meeting at Montreal, Canada, makes it fitting that emphasis be placed upon the contributions to conchology by Philip P. Carpenter, who once resided in that city.

Although Carpenter is generally recognized as one of the great conchologists, his works dealing with the mollusks of the West American region are the ones on which his fame rests. Announcement of his election as a corresponding member of the California Academy of Natural Sciences was published February 2, 1863, in Volume 3 of the Proceedings. He carried on active correspondence with several of the members and published four papers in the Proceedings of that institution, three in 1864-1865 and one in 1866.

Carpenter was the author of many papers but the work which stands as one of the great contributions to west American Conchology, one which has been invaluable for all subsequent work in this region, is his "Supplementary Report on the Present State of our Knowledge with Regard to the Mollusca of the West Coast of North America." This appeared in the Report of the British Association for the Advancement of Science for 1863, issued August, 1864. This is probably known to students by the reprint, with minor changes, published as Number 252 of the Smithsonian Miscellaneous Collections in 1872. This excellent work (together with its precursor of 1857) brings together the scattered information on west American mollusks which had been published up to that time, with reference to original publications, localities, and critical remarks upon specimens, many of them based upon study of type specimens. This publication accompanied by thirteen other early papers by Carpenter, is to this day an invaluable source of information. The work is without illustrations but fortunately Dr. K. V. W. Palmer has undertaken the laborious task of locating, illustrating and publishing critical remarks on Carpenter's type specimens. Her publication, issued in 1958, dealing with the type specimens of species described by Carpenter (from San Diego to British Columbia), is in turn an invaluable reference work.

We, as members of the California Academy of Sciences, consider it a privilege to make this statement of appreciation of the work of a distinguished early corresponding member, Philip P. Carpenter, whose brilliant contributions formed a firm basis upon which subsequent workers could advance knowledge of west American Conchology.

BRITISH MUSEUM (NATURAL HISTORY). I. C. J. Galbraith and P. Dance. Read by Ruth D. Turner.

The Rev. Philip Pearsall Carpenter, though an Englishman, devoted almost the whole of his conchological activities to the fauna of the west coast of North America, and spent his most productive years in Montreal. As a result, his life and works are more familiar to North American malacologists (see Palmer 1958) than to his countrymen. On the other hand, less attention has been paid to events that led up to the publication of his most important conchological work, the *Mazatlan Catalogue* (Carpenter 1857 a & b). It was the acquisition of the remarkable collection of shells from Mazatlán, Mexico, on which this was based that directed his interest towards the west coast fauna.

Carpenter's first publication on shells (1855) shows that he had already made the acquaintance of Hugh Cuming (1791–1865). Cuming had amassed the most important private shell collection ever made (see Clench 1945), which at that time contained far more species than were to be found in the British Museum collections with which it has since been amalgamated. The majority of Carpenter's writings, and the *Mazatlan Catalogue* in particular, show that he must have worked very closely with Cuming (despite Hedley's

(1910) statement that Carpenter was one of several leading British conchologists who would have little or no dealings with him), as his own words show: "To Hugh Cuming, Esq. I am under extraordinary obligations for his singular urbanity, in allowing the unrestricted use of his invaluable collections, his library, and his original information to a complete stranger" (Carpenter 1857a: iv, footnote).

Early in 1855, Carpenter and his brother-in-law purchased part of a collection of shells made at Mazatlán by a Belgian, Frederick Reigen, between 1848 and 1850. Little is known about Reigen, but his collection (of which the hundred thousand shells estimated to have been handled by Carpenter formed only a part) must have been truly remarkable (see Palmer 1951 : 6; 1958 : 11). Carpenter divided his material into several sets, of which the first and second duplicate series are at the New York State Museum, Albany, and the Redpath Museum, McGill University, respectively.

The first and only complete set was presented to the British Museum in 1857 under certain conditions (Carpenter 1857a : iii), one of which was the publication by the Trustees of the *Mazatlan Catalogue.* This had already been printed by Carpenter himself at Warrington, Lancashire, England. Carpenter issued some copies (1857a), which differ from the British Museum publication (1857b) in title-page and preface only. The official preface, signed by J. E. Gray, is much condensed from Carpenter's own. The dates 1855–57 on the privately-issued title-page, and those which appear as printer's signatures at the foot of certain pages in the text, may indicate nothing more than the dates when sections of the type were set up. This work of over five hundred pages, introducing 222 new species, is not illustrated, although the United States National Museum possesses a complete set of drawings, by Carpenter, of the new species. Possibly he encountered difficulties in illustrating the *Mazatlan Catalogue,* which may have conditioned a lifelong avoidance of figures in his publications. Since he figured only one of his five hundred new species, it is fortunate that most of his descriptions are good. Although Carpenter described as new almost a third of the 692 species in the *Catalogue,* the fact that he listed nearly a sixth as indeterminate and synonymized over a hundred existing names, shows that he was not an indiscriminate splitter, and displays an early appreciation of the importance of a fauna as a whole. One of the two privately-issued copies of the *Catalogue* in the British Museum (Natural History) has been annotated by Carpenter, though few of the annotations are additional to those printed (Carpenter 1857a & b : 546–552). This copy shows that in August 1857 Carpenter was using his initials rather than his distinctive monogram (see Palmer 1958, frontispiece).

The collection presented to the British Museum is maintained as a separate entity and is still mounted in Carpenter's individual manner on glass tablets, labelled in white paint and displayed on dark blue paper. Each tablet bears a number, printed in the *Catalogue,* which is the last part of the British Museum (Natural History) register number. To quote this identifying cipher for any tablet, the printed number has only to be prefixed by'57.6.4.'. Thus the register number of the holotype of *Dentalium corrugatum* Carpenter (1857a & b : 189), on tablet 881, is 57.6.4.881.

Even at a time when the British Museum was making some of its most important acquisitions of shells, the Mazatlán Collection represented an addition of unique importance. Its present usefulness would be greatly enhanced if it could be revised and the new species figured, preferably by a worker who combines knowledge of the west coast fauna with respect for such historic material.

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SMITHSONIAN INSTITUTION (USNM). Remington Kellogg and H. A. Rehder. Read by Harald Rehder.

On the occasion of the 26th Annual Meeting of the American Malacological Union in Montreal, the Smithsonian Institution is delighted and proud to join other institutions in paying tribute to Philip Pearsall Carpenter.

The Smithsonian owes a special debt of gratitude to Philip Pearsall Carpenter, for he may be considered to have been our first curator of mollusks. The five months that he spent in Washington, from December 1859 to May 1860, unpacking from dust-covered boxes the specimens of shells received during previous years, and arranging and classifying them, resulted in making what had been merely an accumulation of shells into a usable scientific collection. To complete his work on the collection he took many specimens with him to England, and had others sent to him there. All of these were returned in 1864 after critical study with the named material in London, thereby greatly enhancing the value and importance for future study of the early Smithsonian collection of mollusks.

The first malacological publication of any importance issued by the Smithsonian Institution was Carpenter's "Lecture on Mollusca," based on the three lectures he gave while in Washington, and published in 1861.

REDPATH MUSEUM. Vincent Condé.

(Abstract)

The Carpenter collection is now systematically arranged and stored in modern cabinets recently built. A great percentage of the specimens have been unglued from their original glass mounts, washed and catalogued. This collection has already provided material for study and research to several institutions and individuals. Besides the Carpenter collection, other important collections in the Redpath Museum are the Mickles Cuban Mollusca and G. M. Dawson's Atlantic and East Coast Mollusca.

During the intermission which followed, the special exhibit *The World of Shell* was officially opened by Mrs. Turnham and Dr. Harald Rehder, representing the Smithsonian Institution. Mr. Vincent Condé and Miss Nancy Wisshoff who had been responsible for layout, design, and installation were introduced.

SMALL BEGINNINGS. Adlai B. Wheel, Syracuse Boy's Club, Syracuse, New York.

NATURAL HISTORY MUSEUMS OF EUROPE. Ruth D. Turner, Museum of Comparative Zoology, Cambridge, Massachusetts.

(Abstract)

During trips made to Europe in 1958 and 1960 for the purpose of studying the collections of Teredinidae I tried to get some idea of the collections as a whole.

In the Museum National d'Histoire Naturelle, Paris, France it was a privilege to handle the material used by Lamarck, Quatrefages, Adanson, the Fischers, Lamy and others. Dr. E. Fischer-Piette, Director of the Laboratorie de Malacologie, explained that many of the historic collections were held as separate units and that the main collection was generally arranged according to the revisions of Lamy or Tryon's Manual of Conchology. In the Laboratorie de Palaeontologie Dr. Denise Mongin was a tremendous help in locating fossil type specimens and literature. A visit was also made to the École des Mines to see the Deshayes collection and to visit with Dr. Paul Fischer who also publishes the Journal de Conchyliologie.

The collections of the Musée Royal d'Histoire Naturelle in Bruxelles, Belgium are now housed in a modern skyscraper building, the mollusk department being on the thirteenth floor. Dr. W. Adam is curator of mollusks and the Dautzenberg material forms an important part of this large and well curated collection. The Musée du Congo Belge, Tervuren, Belgium is devoted almost entirely to the Congo but is exceedingly rich in material from that area.

My visit to the Netherlands was delightful for Dr. T. v.B. Jutting Vander Feen, Curator of Mollusks at the Zoologisch Museum in Amsterdam was most kind. Here the collection was rich in material from Indonesia. In Leiden, Dr. C. van R. Altena is curator of mollusks at the Rijksmuseum van Natuurlijke Histoire, a collection strong in material from the Netherlands possessions and Europe. It was a pleasure to attend the joint meeting of the Netherlands Malacological and Zoological Societies and to speak on the Teredinidae in the country where the first work on the "zeeworms" was done.

The mollusk collection in the Senckenberg Museum, Frankfort a.M., Germany is one of the largest and most important in Europe. It is strong in land and freshwater material but weak in marines. Here are the collections

on which the Conchylien Cabinet was based, the collections of Kobelt, Mollendorff, Wenz and others. The collection is in fine condition as a result of the untiring efforts of Dr. A. Zilch. The Berlin Museum für Naturkunde is located in the Eastern Sector of the city. Like the Senckenberg Museum, this was one of the main repositories for the early German workers. It contains the most important collection of Teredinidae in Europe and my work was greatly facilitated by the kindness of Dr. R. Kilias, curator of mollusks, and Dr. Jaeckel who has retired.

In Copenhagen, Denmark, the new building for the Universitetets Zoologiske Museum will soon be under construction. Dr. J. Knudson explained that it would be difficult to get an impression of the department in its present crowded condition but that, because of the long standing interest of the Danes in deep sea research, the collection is rich in this material. Helsinger is the site of a new marine biological station, a small but efficient laboratory with a staff whose enthusiasm rivals that of their director, Prof. Thorson.

Probably every malacologist dreams of visiting the British Museum (Natural History) for in its rich store of historic collections are the specimens on which much of the early work was based. The department was moved to beautiful new quarters following the war and the curatorial procedures are now being modernized. This is a gigantic task and one in which the entire malacological world is vitally interested.

Following a brief discussion on European museums and personnel the formal session of opening day was concluded and the members dispersed to follow their own interests, some getting in additional sight-seeing, others gathering in groups in the spacious lounges at the dormitory or in the local restaurants to renew acquaintances and discuss problems over a cup of coffee.

In the evening the Executive Council had a lengthy meeting in one of the lounges at the Royal Victoria Dormitory while in another the members gathered informally to enjoy pictures of former meetings and entertainment furnished by members of the New York Shell Club.

Wednesday morning was sparkling clear and cool and the members, after a breakfast gathering in the dormitory cafeteria, headed for the museum with enthusiasm for the day ahead. Dr. Palmer opened the meeting promptly at 8:00 A.M., and after making announcements concerning the group photograph to be taken at noon and the trip to the Université de Montréal in the evening she introduced the first speaker:

BEHAVIOR STUDIES AN AID TO TAXONOMY AS EXEMPLIFIED BY *LIMAX POIRIERI.* Edward J. Karlin, Bowling Green State University, Bowling Green, Ohio.

(Abstract)

It is proposed that studies of the behavior of organisms might be useful in determining taxonomic relationships. Amongst the mollusks, many slugs show complex behavior patterns, particularly those related to the mating process. Thus, *Limax maximus* mates while hanging suspended from a slime thread and *Derocera reticulatum* engages in a "courtship" ritual of extended duration.

Walden and Altena have both demonstrated, anatomically, that the slug which Pilsbry (1948) illustrated as *Limax marginatus* is in reality *Limax poirieri* Mab. However, their papers are frequently overlooked by American researchers. This paper indicates that *L. marginatus* and *L. poirieri* may also be separated on the basis of behavioral characteristics. The former is a highly arboreal form, in fact is held to be synonomous with *L. arborum* of English workers. In contrast, the latter slug is typically associated with the soil surface, rarely, if ever, climbing low vegetation. Thus, observations of living slugs may be used as a basis for their identification.

PAPER CHROMATOGRAPHY IN SYSTEMATIC RESEARCH[1]. John B. Burch, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

(Abstract)

Paper partition chromatography as used in taxonomic studies is a differential-migration method of biochemical analysis in which flow of solvent causes the components of a mixture to migrate differentially from an initial zone on a piece of filter paper. The separation is based upon the fact that the rate at which molecules in the solvent pass over the filter paper is related to their relative affinities for the solvent and paper. Each chemical substance has its characteristic affinities for solvent and paper, and hence possesses a characteristic rate of movement. Detection or identification of the separated compounds is by use of the fluorescence produced by ultra-violet light and/or by the application of reagents (usually ninhydrin) which produce colored areas in the positions occupied by the separated materials.

Paper chromatography has in the past been used as a systematic tool with protozoa, insects, mollusks, fish and human races. Two different approaches have been used: 1) one-dimensional ascending, descending and horizontal chromatographic pattern analysis of fluorescent substances and ninhydrin-positive compounds, and 2) qualitative and quantitative analysis of amino acids and peptides.

Our preliminary results with mollusks indicate that: 1) different organs of the same specimen give quantitatively, and sometimes qualitatively, different patterns; 2) adult specimens of the same species give the same general pattern, but it is hard to standardize procedure to constantly give precisely identical patterns; 3) adult and young of the same species give the same patterns for some species, for other species the patterns are different between adult and young; 4) no sex differences are demonstrable in some species, but can be demonstrated in other species; 5) larger taxonomic categories (*e. g.*, families) can readily be distinguished; 6) in smaller taxonomic units (*e. g.*, species) identification is very difficult; 7) frozen tissues give quantitatively different patterns from fresh tissues; 8) dehydrated tissues give quantitatively different patterns from fresh tissues; 9) using similarity of patterns to group species, species generally fall into groups corresponding to morphological similarities; 10) in working with smaller taxonomic categories differences are quantitative rather than qualitative, and therefore more refined methods must be used in characterizing species.

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[1] This investigation was supported (in part) by research grants E-952 and 2E-41 from the National Institute of Allergy and Infestious Diseases, U. S. Public Health Service.

Regardless of results published by others and those apparent in this investigation, it is felt that such variables as seasonal hormonal regulation of tissues fluid constituents, effects of diet, changes during growth, and population and individual differences have still not been adequately investigated in taxonomic paper chromatographic studies.

PROBLEMS OF MONOGRAPHING A GENUS. S. C. Hollister, College of Engineering, Cornell University, Ithaca, New York.

SOME SOUTH AFRICAN ISCHNOCHITONS. Virginia Orr, Academy of Natural Sciences, Philadelphia, Pennsylvania.

(Abstract)

Five species of the genus *Ischnochiton* (Amphineura) are found intertidally and in shallow water along the coasts of the Union of South Africa. They are *Ischnochiton textilis* (Gray, 1828), type of the genus, *I. tigrinus* (Krauss, 1848), *I. hewitti* Ashby, 1932, *I. elizabethensis* Pilsbry, 1894 and *I. oniscus* (Krauss, 1848).

The two larger species (20–35 mm. in length) *I.textilis* and *I. tigrinus,* are distinguished by mesh-like pitting of the jugum and pleural areas and fine, slightly nodulose striae on the end valves and lateral areas of the middle valves. The insertion plates of the middle valves frequently have two slits on each side but this character is not constant, varying between individuals and valves of the same animal. The oval girdle scales of both species are distinctly grooved. Small, square pits, slightly carinate valves with narrow sinus separate *I. textilis* from the rather similar *I. tigrinus.* The latter has diamond-shaped pits, rounded valves and a relatively wide sinus.

Smooth or finely granular jugum and pleural areas characterize the three smaller species (8–18 mm. in length). Commonly, there is only one slit on each side of the middle valve insertion plates. *Ischnochiton hewitti* has distinctly grooved girdle scales which, with its finely granular valves, separate it from the other species. The girdle scales of *I. elizabethensis* are almost smooth but microscopic examination reveals fine striae covering the lower three-quarters of each scale. In *I. oniscus* the microscopic striae line each scale to the apex. A more convenient character for the determination of these species, however, is the sculpture of the jugum of the second and third valves. This area is covered with minute round granules in *elizabethensis* and is polished or, rarely, with ovate granules in *oniscus.*

The radulae of the three small species do not suggest close relationships between them. The major lateral of *I. oniscus* has three short cusps, *I. elizabethensis* has one long cusp and *I. hewitti* with two short cusps closely resembles the radula of the type of the genus *I. textilis.*

Because of extensive overlapping in the ranges of these chitons it is possible to collect four species of *Isochnochiton* at many points along South Coast of the Union of South Africa. Not infrequently three species have been taken from the underside of the same stone. Characteristic of the South Coast are: *I. textilis,* Cape Penninsula to East London; *I. tigrinus,* Danger Point to Kleinmond; and *I. elizabethensis,* False Bay to East London. *I. hewitti* is a cold water form restricted to the West Coast and overlapping

the other species in False Bay. *I. oniscus,* on the other hand, has a subtropical distribution and is frequently found in the same tide-pools with Indo-West-Pacific mollusks along the Pondoland and Natal coasts. Nevertheless, a few specimens of *oniscus* have been found as far south as Cape Agulhas.

THE BIVALVE GASTROPOD AND THE OPISTHOBRANCHS. William J. Clench, Museum of Comparative Zoology, Cambridge, Massachusetts.

(Abstract)

The recent discovery of a live "bivalve" gastropod in Japan and in Australia has stimulated much thought regarding the evolution and development of our mollusks.

There appears to be no question that this bivalve, *Tamanovalva,* is a true gastropod. It has a head, tentacles and a radula, anatomical characters not possessed by any known bivalve. Based upon the structure of the radula, it is placed in the Order Sacoglossa, having but a single row of rachidian teeth.

Accessory plates or valves have developed in the bivalves as exhibited by the Pholadidae, so an attempt to add another plate or valve by a highly organized and strikingly dynamic group as the Opisthobranchs should not be unexpected.

It has been suggested more than once that the operculum of the Prosobranchia, in the Gastropods, is in reality the equal or derivative of the second valve in the bivalves. From the standpoint of both embryology and anatomy this is not true. The operculum has its origin from a specialized gland on the posterior and dorsal area of the foot; the valves of a bivalve have their origin in the mantle. Kawaguti states that an operculum is formed in *Tamanovalva* but it is lost after the two extensions or "flaps" are developed on the left and right margins of the embryonic shell.

Members of the subclass Opisthobranchia are an explosive group. They seem to be probing to reach into all types of environments. Take, for example, the Pteropods, the Sea Butterflies. They have become a very dynamic element among the pelagic mollusca. The Thecosomata, the Pteropods producing glass-like shells, exist in vast numbers and in certain areas the sea floor is literally paved with their shells.

The Order Nudibranchia, the largest order in the Opisthobranchia, has produced a remarkable number of very beautiful animals, which in turn have become highly specialized. Detorsion has become complete with the nervous system concentrated in the head region. Some have accessory gills while others depend upon the entire body surface for respiration. Dorsal outgrowths, the cerata, are present in many forms. These function as a part of the digestive tract to aid, at least in part, in the elimination of certain of the waste products. The Aeolids feed on Coelenterates and in some way prevent the nematocysts from exploding. These nematocysts are stinging cells and upon contact with prey or enemy can discharge these cells which introduce a very virulent poison. It has been stated that the Nudibranchs use their stinging cells for their own advantage, but recent unpublished

work by Dr. Russell refutes this idea. These unexploded cells are forced out through the cerata simply as waste products and are not used as a defensive mechanism.

So far as known, all Opisthobranchs possess a shell in the larval stage but many, such as the nudibranchs and certain of the pteropods, have discarded the shell. In others, such as *Umbraculum* and *Aplysia*, the shell is greatly reduced and probably gives the animal little or no protection.

It would seem that *Tamanovalva* is attempting a new experiment in producing two valves but its success or failure can only be ascertained with the passage of time. The very few related genera have but few species and these, since the Eocene, have diverged but little.

Kawaguti, Siro, 1959, Proc. Japan. Acad. 35:607–611.

NOTES ON THE BIVALVED "UNIVALVES." Joseph P. E. Morrison,[1] U. S. National Museum, Washington, D.C.

(Abstract)

There are two groups (at least genera) of these small Gastropods. The group with the simpler "hinge" structure was named in 1949 by Beets as the Subfamily:

BERTHELINIINAE

The recently published articles on the animal and the formation of the shell of the Saccoglossate Opisthobranch Mollusk named *Tamanovalva limax* Kawaguti and Baba have finally allocated these snails correctly. Previously this peculiar group of shells has been placed in the Family Juliidae in the Pelecypoda.

The first publication on this type of Mollusk, based on the left valve only, correctly, if accidentally, called it a snail. The genus *Berthelinia* Crosse 1875 was based on a tiny shell, with spiral nucleus, from the Eocene of the Paris Basin, and was supposed to belong near the Family Capulidae.

Fischer in 1886 and Crosse and Fischer in 1887 described the shells more fully from new material including both valves, and placed *Berthelinia* in the Pelecypods near the Family Prasinidae. One year later, Cossmann published *Ludovicia squamula* from Deshayes' manuscript; this was another species from the Paris Basin Eocene.

The first publication of a Recent species of this group was by Dautzenberg in 1895. It is interesting to note that this shell from Nossibé (Madagascar) was named *Berthelinia schlumbergeri,* after the collector, who eight year before had collected the additional shells and drew the figures for Crosse and Fischer.

The next publication of a Recent species was from Australia, by Gatliff and Gabriel. *Edenttellina typica* was described and figured from odd "valves". Hedley in 1920 listed all the Australian locality records known to him, and described another species *Edenttellina corallensis* from off the Hope Islands, North Queensland. He referred *Edenttellina* to the Family Juliidae, because of the resemblance of the spiral nuclear shells of those of *Julia.*

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[1] Published by permission of the Secretary of the Smithsonian Institution.

One specimen, left valve only, with the embryonic nuclear whorl intact, collected personally on Raroia Attoll in the Tuamotu Islands in 1952, agrees very well with the figures of *Edenttellina corallensis* Hedley 1920.

The recent reports by Keen conform the occurrence of this group on the Eastern Pacific shores of America. Re-examination of the holotype specimen[s] (odd valves of ? *Scintilla chloris* Dall has shown that these shells definitely belong here, probably to the same genus. All the characters seen on this pair of shells agree with *Berthelinia,* although the nuclear spiral is missing.

The original publications of *Berthelinia, Ludovicia, Edenttellina,* and *Tamanovalva,* all rescribe edentulous hinged shells. Hedley later described and figured "teeth" on the hinge line of *Edenttellina typica.* In this connection it should be noted that the specimens of *Tamanovalva limax* given to the United States National Museum by Dr. Kawaguti show "hinge tooth" structure on the hinge line similar to that figured by Hedley, and like those on the holotype of *chloris* of Dall. There is apparently only a difference in degree of development of these "hinge teeth" in the different species. The asymmetry of the muscle scars on these shells, so difficult to see, is almost the same as that seen on the shells of *Julia.*

Family JULIIDAE
Subfamily JULIINAE

Small thick greenish shells with heavy "hinge" structure, and isocardioid divergent "beaks", the embryonic shell on the lateral surface of the left "valve" apex. Almost all the publications (except those on *Tamanovalva*) have the shell halves reversed. In this family the broad ends of the "valves" are anterior, with the spiral embryonic nucleus on the left "valve", regardless of previous statements of the shell orientation. The accessory muscle scars on the interior of the two "valves" are asymmerical, in direct contrast to the regular symmetry of the secondary scars in the shells of the Pelecypods.

One fine large specimen of *Julia,* collected alive by Dr. P.E. Cloud, Jr. of the United States Geological Survey from the west side of Saipan, Mariana Islands, in 1949, has been waiting in alcohol in the United States National Museum collections since that year. The *Tamanovalva* stimulus has produced results by creating unusual interest in these animals. This specimen has not been dissected, but the first glance at *Julia* "on the half shell" (with right valve removed) showed external gross anatomy strikingly similar to that figured for *Tamanovalva.*

The gastropod foot is folded (grooved) ventrally when contracted within the shell. A head is present, with rhinophores. No eye pigment spots, seen in *Tamanovalva,* are evident in this specimen. The mantle chamber is primarily on the right side, and is much less extensive under the left mantle lobe. The single series of gill lamellae is attached to the inside of the right mantle surface, extending as a band over the dorsal line to a point half-way down on the left side. The muscles and muscle-scars on the shells are asymmetrical, mirroring the bivalved condition developed around an asymmetrical snail body. The single adductor muscle is closer to the ventral border than it is to the anterior end. In the right valve, there is one additional tiny scar for the head retractor muscle, near the anterior dorsal point of mantle junction. The left valve shows two small scars, one dorsal to, the other anterior to the adductor muscle scar. These muscles are distinct and evident when the animal is out of the shell, appearing as spots of different color at the mantle surface.

As Dr. Keen has indicated, the entire Family Juliidae must be placed in the Gastropoda. Only further studies can determine the value of the two subfamily names Juliinae and Bertheliniinae, as well as the value of the generic names for members of the *Berthelinia* complex. It is premature to fully synonymize any generic names, until the anatomy of the species other than *Tamanovalva limax* has been examined.

STRUCTURE, ZOOGEOGRAPHY AND EVOLUTION OF THE ABYSSAL MOLLUSK FAUNA. Arthur H. Clarke, Jr., National Museums of Canada, Ottawa, Ontario, Canada.

(Abstract)

Continuing studies on abyssal mollusks have made necessary the compilation of an annotated check list of the abyssal mollusks of the world, i.e., those species occurring at depths of 1000 fathoms and greater. Analysis of the check list has resulted in a number of conclusions, some of which are given below. The check list and a more complete, documented analysis will appear later.

1. The abyssal mollusk fauna may be distinguished from the shallow water mollusk fauna by the following characteristics:
   a. All abyssal chitons, so far known, belong to the primitive genus *Lepidopleurus*.
   b. In the deep sea, archaeogastropod species slightly outnumber mesogastropod species. In shallow water mesogastropod species substantially outnumber archaeogastropod species.
   c. With respect to the total mollusk fauna, scaphopods are relatively more abundant in species and individuals in the abyssal zone than in shallow areas.
   d. Protobranch species far outnumber septibranch species in the deep sea and septibranches slightly outnumber eulamellibranchs there. In shallow water eulamellibranch species are much more abundant than those of any other bivalve order.
   e. Many common shallow water families (e.g. Littorinidae, Veneridae, Cardiidae, and Tellinidae) are nearly completely absent from the deep sea. Other families are relatively much more abundant there (e.g. Turridae, Trochidae, Nuculanidae, Cospidariidae, and Malletiidae).
2. The oceans are usually considered to comprise approximately forty-five separate basins. Over 1000 species of abyssal mollusks, distributed among approximately 7000 lots, are now known. Among these only the cephalopods contain species which have been recorded from more than ten ocean basins and which can be considered cosmopolitan in distribution. Non-cephalopods have been recorded from an average of only 2.0 ocean basins per species.
3. Between 1000 and 2000 fathoms the relative contribution of the major feeding types to the total mollusk fauna remains nearly constant with increasing depth. Detritus feeders comprise approximately 24%, suspension feeders 18%, and scavengers and carnivores 54%. Commensals

and parasites decrease from 8% to 2% of the total mollusk fauna with increasing depth between these limits. Below 2800 fathoms down to the deepest depths from which mollusks are known (5850 fathoms) the number of recorded species is too small to allow such generalizations.

4. The evolution of the abyssal mollusk fauna is apparently linked with a continuous invasion of the deep sea from shallow water all over the world. These migrations appear to have been occurring since the early Paleozoic and were not solely, or primarily, from the polar regions. The abyssal mollusk fauna cannot properly be considered as a relatively recent one as sometimes proposed.

SHALLOW-WATER MOLLUSKS OF EASTERN CANADA. E. L. Bousfield, National Museums of Canada, Ottawa, Ontario, Canada.

(Abstract)

The geographical distribution of intertidal and estuarine marine mollusks in Canadian Atlantic coastal waters is related to principal zones of summer surface temperature. These zones (average summer temperature in parentheses) are the subarctic (>12°C.), boreal or cold-temperate (12—15°C.), cool temperate (15–18°C.) and Virginian (>18° (20)°C.). Certain species of mollusks such as *Mesodesma arctatum* and *Margarites helicinus* are limited southward in subarctic and boreal zones (cold-water areas) by maximal summer temperatures for survival, whereas *Cumingia tellinoides, Bittium alternatum* and others are limited northward in cool temperate and Virginian zones (warm-water areas) by minimal summer temperatures for reproduction. Of 32 species of intertidal bivalves in the region, 7 (22%) are confined to the cold-water regions whereas this is the case in only 4 (13%) of gastropods and chitons. On the other hand, only 15 (47%) of bivalves but 19 (65%) of gastropods are confined to the warm-water zones. Basic behavioural differences may explain in part the tendency for bivalves to be relatively more abundant in cold-water intertidal areas and gastropod species more common in warm-water regions. Bivalves are essentially burrowing animals and are presumably better adapted to survive the rigorous winter frost and ice action in cold-water areas; on the other hand, the more versatile surface-crawling gastropods seem better able to take advantage of the diverse ecological niches in warm-water regions.

SHELL COLLECTING IN THE NETHERLANDS ANTILLES. H. E. Coomans, The Netherlands. (Research Fellow, American Museum of Natural History, New York City.)

(Abstract)

The Netherlands Antilles are six small islands in the Caribbean sea. Three (Aruba, Bonaire and Curaçao, the ABC-islands) are located about 40 miles north of Venezuela, three others, Sint Maarten, Saba and Sint Eustatius (Windward-islands) are about 160 miles east of Puerto Rico. The climate is tropical.

With a yearly rainfall of 20 inches the vegetation of the ABC-islands is semi-desert. There are no rivers, only a few springs. Freshwater mollusks are

Planorbis circumlineatus, Physa cubensis and Potamopyrgus parvulus. There is even a naked landsnail (*Vaginulus*). As the islands are close to the coast of Venezuela, we could expect the land molluscan fauna to be related to South America. But this is only partly true. All together there are 35 species of land and freshwater gastropods on the ABC-islands, one-third belong to the South-American fauna, 12 are endemic, the rest are Antillean. Two genera are endemic: *Cistulops* and *Bonairea.*

The Windward-islands have a rainfall of 40 inches a year, more vegetation, even a tropical rainforest in the craters of the extinct volcanos. The land and freshwater malacofauna has more than 50 species, most belonging to the Antillean fauna.

The marine fauna is typical West-Indian, hundreds of species can be collected. The sea along the northeastern coast of the ABC-islands is very rough, the limestone is karstic with many splash pools, in which a special fauna lives (*Puperita, Nodilittorina*). In the small bays at the northeastern coast *Spirula* and *Janthina* can be collected (empty shells).

At the southwestern sides of the islands the water is calm, it is an ideal place for skindiving and collecting. Here there are different types of habitats: rocky shores with surf-niches (*Chiton, Nerita, Fissurella, Livona*), sandy beaches, especially on Aruba with many dead shells (*Conus, Cypraea, Tellina*), some bays have coral debris under which *Planaxis* and *Tegula* live.

There are a great number of sub-tidal species, on rocks (*Vasum, Astraea, Spondylus* and *Chama*), under rocks (*Aplysia*) and in rocks (*Lithophaga*). On Acropora coral lives *Coralliophila,* and on Gorgonaria lives *Cyphoma.* Small species are found on algae, and on the sandy bottom species of *Stombus* and *Pinna. Octopus* swims around everywhere.

In the shallow bays is a different fauna, in consequence of different oecological conditions (the water is warmer, more salty, dirtier, no wave action). On the shore live *Nerito fulgurans, Neritina* and *Batillaria.* Many Lamellibranchia in the sandy bottom (*Asaphis, Chione, Trachycardium* and *Codakia*). Along the shores of the bays mangrove trees (Rhizophora mangle) are found, with on their roots *Littorina angulifera, Crassostrea rhizophorae* and *Isognomon alatus.*

Some bays lost connection with the sea, this causes the death of the mollusk fauna. Another cause of mortality is the oil-residue of the refineries on Curaçao and Aruba.

At several places one may find seashells far inland. They are not fossils, but they have been used by the Indians in pre-Columbian time. (*Strombus, Melongena, Chama.*)

Shell collections are present on Curaçao in the Caribbean Marine- Biological Institute, the Curaçao Museum and several high schools.

EVOLUTION OF THE NON-MARINE MOLLUSKS IN THE CRETACEOUS AND TERTIARY OF WESTERN CANADA. Loris S. Russell, National Museums of Canada, Ottawa, Ontario, Canada.

(Abstract)

In the northern great plains region of western Canada and adjacent United States there is an unusually fine sequence of Cretaceous rocks, made up of an alternation of marine and non-marine deposits, the latter continuing into the Paleocene. Rich faunas of fresh-water and terrestrial mollusks occur in the non-marine formations, which can be assigned to their proper place in the sequence because of their relationships to the marine formations and to each other. From these faunas groups of species can be selected, which, arranged in their stratigraphic relationships, appear to show evolutionary lineages. One such group is composed of unionids possibly related to *Elliptio,* but having characteristic dorsal sculpture. In the Early Cretaceous examples there is both umbonal and postumbonal ornamentation, but in the Late Cretaceous and the Paleocene the two types of ornamentation are found in separate genera. Another example is found in the genus *Proparreysia,* with a simple lineage in Late Cretaceous time, suddenly expanding into a diversified group of species at the close of the period. Species of *Campeloma* show a composite group of lineages in the Upper Cretaceous and Paleocene faunas, varying at each level between forms with rounded whorls and those with distinct shoulders. The extinct genus *Lioplacodes* occurs from the Upper Jurassic to the Paleocene, and in the Upper Cretaceous and Paleocene shows great variation in degree of slenderness and in surface markings. Another evolutionary line occurs in the extinct family Grangerellidae, which began in Late Cretaceous time with simple depressed shells, having a characteristically toothed aperture but an undistorted body whorl. By Paleocene time the shell had become rotund, and the body whorl had become deflected part way up the spire. During Early Eocene time in Wyoming at least three species occurred, in one of which the body whorl reached the apex of the spire, and in another started down the other side. These selected groups of fossil mollusks suggest evolutionary trends of two kinds: (1) a simple monophyletic stem leading to a complex lateral branching at a later stage; (2) a polyphyletic system in which similar variations are preserved or reproduced in successive stages.

A SOIL PROTOZOAN INFECTING LAND SNAILS.[1] John B. Burch, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

(Abstract)

A free-living soil protozoan, *Colpoda steini* Maupas, has been reported as a facultative parasite in *Agriolimax agrestis* (= *Deroceras reticulatum* (Müller)) (Reynolds, B.A., 1936, *J. Parasit.,* **22**, 48). It was reported to inhabit the slug's albumen gland, ovotestis, spongy tissues, respiratory chamber and alimentary tract. Purportedly it becomes larger and changes its appearance and method of propagation in the snail host. R. L. Burt (1940, *Trans. Amer. Micros. Soc.,* **59**, 414) considers those ciliates very similar to *Colpoda steini* but without a tuft of longer oral cilia to be *Colpoda aspera* Kahl. The species studied by Reynolds should be referred to the latter species.

Two hundred and ten land snails and slugs have been inspected for *Colpoda aspera.* Seventy individuals of the following species were infected: *Neocyclotus dysoni ambiguum, Chondropoma martensianum, Anguispira*

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[1] This investigation was supported (in part) by a National Science Foundation Pre-Doctoral Research Award at Mt. Lake Biological Station and (in part) by a research grant, 2E-41, from the National Institute of Allergy and Infectious Diseases, U. S. Public Health Service.

alternata angulata, Zonitoides nitidus, Ventridens ligera, Mesomphix vulgatus, M. inornatus, Haplotrema concavum, Orthalicus boucardi, Drymaeus dominicus, Allogona profunda, Triodopsis multilineata, T. albolabris, T. fallax, T. fraudulenta vulgata, T. tridentata, Mesodon andrewsi normalis, M. thyroidus, M. t. bucculenta, Praticolella griseola, and *Stenotrema leai.* Infected snails came from Virginia, Florida, Michigan, Ohio, Texas and Mexico. Snails from South Carolina, Louisiana, and Kansas were also inspected but were not found to be infected.

The following species were inspected but as yet have not been found infected: *Pomatiopsis lapidaria, P. cincinnatiensis, Cionella lubrica, Columella edentula, Vertigo ovata, Gastrocopta corticaria, G. contracta, Succinea* sp., *Philomycus carolinianus, Punctum minutissimum, Helicodiscus singleyanus inermis, H. parallelus, Anguispira alternata crassa, Striatura merdionalis, Paravitrea capsella, Retinella identata indentata, Euconulus chersinus, Euglandina rosea, Lamellaxis micra, Stenotrema leai aliciae,* and *Polygyra septemvolva septemvolva.*

Microscopic examination of live snail tissues and culture of excised organs indicate that except for several instances of infection of the renal organ and mantle cavity, all *Colpoda aspera* are restricted to the alimentary canal. A histological study of infected organs has not demonstrated any invasion of the snail tissues.

Colpoda aspera appears not to be a serious pathogen and perhaps does no harm to its snail host, but is merely a faculative commensal. In the previous study it was probably sometimes confused with species of *Tetrahymena,* now known to commonly infect land snails and slugs.

CHANGES IN THE GASTROPOD POPULATIONS IN THE SALT FORK OF THE BIG VERMILION RIVER IN ILLINOIS, 1918-1959. Ralph W. Dexter, Kent State University, Kent, Ohio.

(Abstract)

During 1918–20 Frank Collins Baker made a survey of the mollusks in the Big Vermilion River of east-central Illinois (especially the Salt Fork branch). He established 30 stations for collecting over a stream distance of 45 miles. At intervals between 1934–53 the writer sampled gastropods in the Salt Fork drainage, including 3 of Baker's stations. Between 1956–59 Baker's survey was repeated for snails (except for 4 stations outside of the Salt Fork channel). Major changes found were as follows: (1) Increase in abundance for *Physa* spp. and *Ferrissia tarda*; (2) Slight decrease in abundance for *Helisoma trivolvis*; (3) Increased distribution for *Physa* spp., *F. tarda,* and *H. trivolvis*; (4) None showed decrease in distribution; (5) *Campeloma rufum* and *Amnicola limosa* were not found in later years, but *Pleurocera acuta* was added in abundance at one station; (6) *Physa* and *Ferrissia* remain as most abundant and widely distributed snails; (7) *Lymnaea humilis* and *Goniobasis livescens* remain essentially the same as formerly; (8) Baker did not find snails at 11 stations, while the writer found specimens at all stations; (9) At 6 stations, one species was found in later years to replace another formerly collected there; (10) After 40 years, gastropods are generally more

abundant and widely distributed. (This study was supported by the U. S. Atomic Energy Commission, contract AT (11-1)-411).

THE MOLLUSCAN FAUNA OF PLUVIAL LAKE BONNEVILLE. Ernest J. Roscoe, Chicago Natural History Museum, Chicago, Illinois.

(Abstract)

Lake Bonneville was the largest of the more than 70 lakes which were formed in the Basin and Range province during the Pleistocene epoch. In area and depth it rivalled present Lake Michigan. R. E. Call summarized our knowledge of the Bonneville molluscan fauna in 1884, recognizing some 16 kinds. A review of the approximately 50 kinds now known from the Bonneville deposits is being prepared.

REDISCOVERY OF PILSBRY'S *PHILOMYCUS (PALLIFERA) ARIZONENSIS*. Charles D. Miles and Albert R. Mead, University of Arizona, Tucson, Arizona.

(Abstract)

In 1910, Pilsbry, Ferriss, and Daniels discovered a new species of slug in the Santa Rita Mountains near Tucson, Arizona. Pilsbry named the species *Philomycus* (*Pallifera*) *arizonensis* and noted that this locality was a thousand miles southwest of any other record for the genus. In 1948, Pilsbry stated that the type specimens had been lost or misplaced and that in the absence of a sufficient description, it could hardly claim a place among known species.

Within the past few years a species of slug belonging to the genus *Pallifera* has been found in the Santa Catalina and Santa Rita mountains in southern Arizona. This may represent Pilsbry's lost species, although the possibility that more than one species of *Pallifera* exists in these mountains cannot be discounted. Because of the absence of type material and of what Pilsbry admitted was an inadequate description, it seems advisable to consider *Philomycus* (*Pallifera*) *arizonensis* Pilbry to be a *nomen dubium*. The *Pallifera* recently discovered in these two ranges will be described as a new species, named in honor of Pilsbry. The Santa Catalina and the Santa Rita populations differ subspecifically.

EPIZOOTIC IN THE GIANT AFRICAN SNAIL. Albert R. Mead, University of Arizona, Tucson, Arizona. (The abstract of this paper appears in the report of the Pacific Division meeting.)

Dr. Mead's paper on the Giant African Snail was an ideal one to close a long day of thought-provoking papers, for his delightful sense of humor left everyone completely relaxed. Members again scattered, following their own interests. After dinner we went by bus and private cars to the Biology Department of the Université de Montréal which is beautifully located on a hill overlooking the city. Following a warm welcome by Dr. Edouard Page, director of the department, these movies were shown: *Coral Wonderland, Marvels in Miniature* and *Some Creatures of the Barrier Reef*. Portraying the fabulous Great Barrier Reef, these pictures were enjoyed by everyone and, as they are available through the Australian News and Information Bureau will, I am sure, be used by many local clubs and in classrooms throughout the country.

Thursday was sunny and warm and well before the opening session a crowd had gathered on the steps of the museum. The first paper was called promptly at 9:00 and as usual the smiling Miss Alice Johnstone, Assistant in the Education Department, (and now fondly known as Wendy), was on hand to project the slides.

DESERT, JUNGLE, AND LABORATORY—ACTIVITIES OF A MUSEUM MALACOLOGIST. Alan Solem, Chicago Natural History Museum, Chicago, Illinois.

REMARKS CONCERNING THE BENEFITS OF SYSTEMATIC AND REPETITIVE COLLECTING FROM NAVIGATION BOUYS. Arthur S. Merrill, Bureau of Commercial Fisheries, Woods Hole, Massachusetts.

(Abstract)

When buoys are brought in for periodic cleaning and servicing by the Coast Guard, many attached or clinging species of marine life are available for study. By observing, by sampling, and by recording the data a wealth of scientific information is uncovered. Research along this line offers unusual opportunities for study, some of which are discussed below.

A study of the fouling organisms found on buoys at different latitudes along the coastline will reveal not only the dominant species in a given area, but also the geographical limits of many species at the surface. If the buoy chain and mooring are available, vertical distribution of species can be studied at the same time.

Many thousands of a single species often settle on a buoy and with this material variation within a species can be defined. Or perhaps, using the same material, an investigator might prefer to work out the great changes in gross morphology that occur in the early postlarval to juvenile stages. Another approach could be a study of the settling habits and mechanics of attachment of the early postlarval forms, or of the orientation and adaptation of species.

Because buoys are out for known lengths of time, it is possible to define the limits of the spawning season as well as to determine rates of growth for some species after having systematically collected from many buoys in an area. Mortality studies can be attempted with these same data. Surface temperatures are available at many offshore places along the coast so that the relationship between species and temperature can also be established.

The spawning grounds, the length of the larval period, the direction and rate of speed of water currents—these and other indirect issues can be given at least theoretical consideration as more and more information becomes available through such studies.

Each buoy has its own complex community—a totality of related parts. Scientific contributions resulting from planned marine research using this harvest cannot help but further the progress towards a better understanding of some of the biological intricacies involved.

HOW I COLLECT SPHAERIIDAE. H. B. Herrington, Westbrook, Ontario, Canada.

(Abstract)

Sphaeriid clams (fingernail, pill and pea clams) may be found in almost any body of fresh water. They are especially prevalent in waters with abundant vegetation. Geographically they are found from the Arctic Circle to the tropics.

Many accounts have appeared in the past on how to collect various kinds of mollusks, and Sterki (1895, 1916) dealt specifically with the collecting of sphaeriid clams. However, because detailed methods of securing sphaeriids are usually not covered in articles of a more general nature on collecting, and since Sterki's old articles are inaccessable to many collectors, it seems desirable at this time to present a brief discussion on collecting methods for sphaeriid clams.

In southern Ontario most sphaeriids live near shore and to a depth of about three feet below the water surface, but may be found occasionally to a depth of twenty feet or more. They are bottom dwellers, living quietly half buried in the mud, silt, sand or gravel at the water-substrate interface. In large lakes most sphaeriids are found in sheltered bays, around islands and in other places where wave action has less effect on the bottom.

Equipment used for collecting and sorting sphaeriid clams include a shovel, dip net, drag dredge, 16–17 mesh sieve, collecting pans and pails, sorting tray and celluloid tweezers. All are not always practical under every condition.

HEILPRIN'S CALOOSAHATCHEE HORIZON SHELLS. Lulu B. Siekman, St. Petersburg, Florida.

(Abstract)

This was a series of slides, presenting fossil shells taken in the Lake Okeechobee area in the summer of 1960. Photographed by Ted Kuczynski, the following from some 600 species found were pictured:

Cypraea problematica Heilprin, *Conus adversarius* Heilprin, *Liochlamys bulbosa* Heilprin, *Anadara rustica* Tuomey and Holms, *Arca wagneriana* Dall, *Rangia nasuta* Dall, *Xancus regina* Heilprin, *Scaphella floridana* Heilprin, *Mitra heilprini* Cossman, *Fasiolaria scalarina* Heilprin, *Fusinus caloosaensis florida*—new subspecies, *Vasum horridum* Heilprin, *Cerithium caloosaensis* Dall, *Miltha caloosaensis* Dall, *Cymatoica marcotti*—new species.

SOME OBSERVATIONS AND CONCLUSIONS REGARDING THE POST-LARVAL SURVIVAL OF CERTAIN MEMBERS OF THE EPIFAUNA. Vincent Condé, McGill University Museums, Montreal, Canada.

(Abstract)

This paper dealt with some observations on the post-larval survival of some benthic animals. Mr. Conde pointed out Gunnard Thorson's and Wilson's observations and experiments regarding larval selectivity for the substratum and the ability of some larvae to postpone metamorphosis, but stressed the fact that these abilities are controlled by thermal elements and therefore have a limit controlled by time in relation to temperature. When this limit approaches, it is possible that settlement happens at random rather than by selectivity. This occurs particularly among sedentary epifauna forms that happen to drift into level bottom areas or infauna territory. Sometimes, when this happens, settlement occurs on the exoskeleton of some other living form and as a result, a type of comensalism (i.e. accidental comensalism).

Color slides were shown of several gastropods being hosts to colonies of coelenterates or entomostracans. Interesting were two gastropods, *Fusinus infundibulum* and *Vasum muricatum,* both infauna forms. The dorsum of each one of these species was covered by a colony of the scleractinian *Siderastrea sp.,* probably *S. radians.* Mr. Conde pointed out the possibility that successive generations of these comensals by rejuvenation, may have progressive, indirect pathogenic effects on their hosts due to physical and mechanical factors such as the bulk and weight of the corallum on each other's dorsum effecting their locomotive power.

The Thursday afternoon sessions began with the annual business meeting. Dr. Palmer announced that in the absence of Secretary-treasurer Margaret Teskey, at the meeting of the Executive Council Ruth D. Turner had been appointed secretary pro tem.

As the minutes of the previous business meeting had been published in the annual report bulletin for 1959, they were not read. The secretary protem read the report of the secretary-treasurer for 1959-60:

AMU membership on June 1, 1960 stood at 719, an all-time high; 123 new members were enrolled over the past fiscal year. The 1959 annual report bulletin contained 79 pages and cost $1.09 to print and mail. Net profit on the first printing of *How to Collect Shells* was $691.60. A revision was prepared by Dr. Aurele LaRocque to sell at $2.00. Due to be ready for distribution in March, it has been held up by an illness of the printer.

On June 1, 1959 the credit balance in the AMU treasury was $1,670.08. Receipts over the 1959–60 fiscal year, $961.99, expenditures for the same period, $1,539.97 and a June 1, 1960 credit balance of $1,092.10. A detailed accounting of all receipts and expenditures is furnished annually to each member of the Executive Council.

These reports were approved as read.

A report of the transactions of the Executive Council at the meeting on August 9th, was read and approved as read.

The death of Dr. Paul Bartsch had removed the AMU honorary life president. Though Dr. S. Stillman Berry has never been president of the AMU, he has for several years been an honorary life member; by unanimous vote of the Executive Council his status was changed to Honorary Life President, while at the same time Dr. Fritz Haas was elected to Honorary Life Membership.

Because so many requests for information concerning shells and shell collecting are received by the AMU secretary as well as by various museum curators, the Council appointed a committee (R. T. Abbott, Chairman) to look into public relations and the assembling of literature to be sent to those who request it.

A long discussion had been held by the Council concerning the financial status of the AMU and its Pacific Coast Division. A committee (Chairman

Alan Solem, Albert Mead, Mrs. E. P. Chace, W. J. Clench, J. E. P. Morrison) had been appointed to study the situation and to report at the next meeting of the Executive Council.

The names of the nominees for office for 1960–61 were read, as follows:

President, Thomas E. Pulley; Vice-president, William K. Emerson; 2nd Vice-president (Chairman, AMU-PD) Howard R. Hill; Secretary-treasurer, Margaret C. Teskey; Publications Editor, George M. Moore; Councillors-at-large, Anthony D'Attilio, Dorothea Franzen, Juan Parodiz, Gilbert M. Voss.

It was moved and seconded that nominations be closed and the secretary protem was instructed to cast one ballot in favor of the slate of nominees as read.

The invitation of Dr. Harald A. Rehder to hold the 1961 AMU meeting as guests of the U. S. National Museum had been accepted by the Council.

Motions were made and carried instructing the secretary pro tem to draft letters of thanks on behalf of the AMU to the Director of McGill University Museums and Dr. Pagé, Director of the Biology Department of McGill University, and another to secretary Margaret Teskey conveying the sanction of the AMU to purchase such equipment from treasury funds as she deems necessary in fulfilling her secretarial duties.

Although Dr. Hollister had to leave Montreal before the business meeting he had made a suggestion in his paper, then presented to Dr. Palmer a formal proposal that a committee be set up to investigate the possibilities of having a central agency for the cataloging of information on types. After some discussion it was moved and carried that President Palmer appoint such a committee to consist of three members. She then appointed Dr. Hollister Chairman of said committee, leaving to him the selection of the two additional members.

Five members of the AMU, Pacific Division were present: Mrs. Faye Howard, Miss Mary E. Long, Mrs. Mead French and Mr. and Mrs. Emery P. Chace. The latter, together with Dr. Al Mead were the official delegates of our western group, and Mrs. Chace spoke briefly, voicing the greetings and good wishes of the Pacific Division. (Soon after the June meeting of that body, Dr. Palmer had received a letter from Dr. Rudolf Stohler the chairman, bearing the good wishes for a successful meeting in Montreal and signed by the 95 happy delegates to Asilomar).

Noting that a number of the AMU affiliated shell clubs were represented, Dr. Palmer called upon their members to report on club activities. The following clubs were represented:

Boston Malacological Club, St. Petersburg Shell Club, Greater Baltimore Shell Club, Philadelphia Shell Club, Conchological Section, Buffalo Society of Natural Sciences, New York Shell Club, Greater St. Louis Shell Club, Sacramento Shell Club, Jacksonville Shell Club, Palm Beach County Shell Club, Naples Shell Club.

This concluded the business meeting which was adjourned at 3:30 P.M. Following a brief intermission, Dr. Albert Mead delighted the group with an unscheduled illustrated talk on his trip to Thailand.

This concluded the presentation of papers for 1960. Dr. Palmer announced that members now had a choice of seeing the movie "Between the

Tides", visiting the museum's mollusk department under the guidance of Mr. Condé, visiting the Arctic Institute of North America or of relaxing before getting ready for the evening's cocktail party and banquet.

At 5:00 P.M. came the delightful cocktail party held in one of the now-familiar lounges of the Royal Victoria Dormitory, the AMU as guests of the McGill University Museums. At 6:30 in private cars and a special bus everyone traveled to the Hélène de Champlain, a charming restaurant on L'Ile Ste. Hélène. The parklike setting and the spacious baronial hall were delightful, and the tables were simply and tastefully decorated with American and Canadian flags. At the head table the huge bouquet of red and white flowers (McGill colors) which formed the center piece was flanked by large candelabra. The unique place cards at the head table had been made by Miss Nancy Wisshoff, museum artist, and at each place was a boxed souvenir of the meeting—a topotype specimen of DeKay's *"Unio rosacea",* the beautiful pink color variation of *Lampsilis radiata* (Gmelin) from Seneca Lake, New York, collected and prepared by Mrs. Mary Wheeler.

Following a splendid dinner which was preceded by a blessing given by the Reverend H. B. Herrington and a toast to the Queen, Dr. Palmer introduced, with appropriate comments, those members and their guests seated at the head table.

She called for two minutes of silence in memory of those members who had passed away since the previous AMU meeting, then extended thanks to Mrs. Turnham, Vincent Condé, Miss Johnstone, Miss Wisshoff and others of the staff of the Redpath Museum for their assistance. The spontaneous general applause elequently bespoke the appreciation of the members. Those who had traveled to the meeting from distant places were introduced, Vincent Condé expressing regret that our Cuban members and friends could not be with us.

Dr. Palmer then introduced Col. Baird, Director of the McGill University Station at Mont Ste. Hilaire. Col. Baird gave a bit of the history of the station and explained the geology of the area in preparation for the next day's field trip.

Dr. Loris S. Russell, Director of the National Museums of Canada and speaker of the evening was by now known to the members, for he had given a paper earlier in the week and joined in many of the evening get-togethers. Most of us, however, were not aware that in addition to his scientific interests, Dr. Russell is also a student of Canadian history. In his talk, *Montreal—Natural and Unnatural History,* he cleverly interwove the development of the natural sciences in Canada with the various historic events, beginning with the Indian threats to the village of Montreal. The philosophy and humor with which Dr. Russell enriched his talk delighted everyone, especially so since he furnished the back-drop for the stage on which we had been playing for several days.

(Summary)

Montreal, the largest city in Canada, is situated on an island between the St. Lawrence River and a branch of the Ottawa River. The area is underlain by sedimentary rocks of Cambrian and Ordovician age, which are intruded by acid igneous rocks of probable Cretaceous age. The igneous rocks form the core of Mount Royal, and represent the neck of an ancient volcano. Following the Pleistocene glaciation, the St. Lawrence valley was

invaded by the sea, and beaches with shells of North Atlantic molluscan species occur high on Mount Royal.

Biologically the region around Montreal is part of the northern hardwood belt, which is bounded here on the northwest by the coniferous forests of the Canadian Shield. The plant and animal life is similar to that of the northern parts of New York State and New England.

The early inhabitants were Indians of Algonkian stock, later replaced by Iroquoian people. Montreal was first visited by Europeans under Jacques Cartier in 1535, and a settlement called Ville Marie was founded by Maisonneuve in 1642. After many years of hostilities with the Iroquois and the English, Montreal was surrendered by the French in 1760. It was occupied by the American army under Montgomery in 1775 and was threatened during the War of 1812-14. With the long period of peace in the 19th century, cultural interests began to develop.

McGill University was established in 1821 but did not develop until 1855 when Sir William Dawson became Principal. He organized the teaching of natural science, and established the Redpath Museum. The Geological Survey of Canada was set up in Montreal in 1842. Famous members were Sir William Logan, the first Director, and Elkanah Billings, the first Canadian palaeontologist. The Montreal Natural History Society was founded in 1827 and soon had accumulated large collections in natural history. J. F. Whiteaves was Secretary and Curator from 1864 to 1876; his dredging expeditions to the Gulf of St. Lawrence yielded important zoological results.

There were also independent naturalists like Alexander M. Ross. He was a physician who had served with the Union Army in the Civil War and afterwards practiced medicine in Montreal for many years. He studied plants, birds, and mammals, and wrote books on Canadian natural history.

In recent years Montreal has become a great center of biological research and teaching at McGill University, MacDonald College, the University of Montreal and the Montreal Botanical Gardens. A great interest in the study of nature is developing, especially among the young French-speaking Canadians.

As Dr. Thomas Pulley, the president-elect, was unable to be at the meeting, Dr. Palmer turned the reins of the president over to Dr. William K. Emerson, vice-president-elect.

Dr. Emerson thanked the membership for the honor of his election, then called for a rising vote of thanks to Dr. Palmer, who had done such a splendid job in planning and then quietly directing the smooth running meeting. Sustained applause again showed the appreciation of the membership.

The evening was formally closed with the singing of *God Save the Queen,* a tradition on such occasions in the member nations of the British Commonwealth. It was a different and a pleasant touch.

Following the banquet the flowers from the head table were taken to Mr. Lovell Mickels, the benefactor of the mollusk department of the Redpath Museum, unable to attend because of illness.

At 9:00 A.M. on Friday, another perfectly beautiful day, an enthusiastic group gathered at the parking lot near the dormitory to get last-minute instructions from Mrs. Turnham before setting out for Mont St. Hilaire.

First stop was made at a gravel pit to see the fossil marine mollusk bed, remnants of the Champlain Sea which occupied the area 11,500 to 9,500 years ago. Those interested were given the opportunity to collect.

Arriving at Gault Lodge on the Mont St. Hilaire station grounds, a box lunch was enjoyed and members were then given a choice of several guided trips. Each was led by a member of the staff and a malacologist who could aid in identifying the material collected. By 3:00 P.M. all groups reassembled at the Lodge and the following composite list of all mollusks collected was made.

Physa ampullaria
Campeloma decisum
Helisoma campanulatum
Amnicola sp.
Ancylus sp.
Elliptio complanatus
Anodonta grandis
Sphaerium sp.
Succinea ovalis
Oxyloma retusa
Succinea avara
Zonitoides arboreus
Discus cronkhitei
Helicodiscus parallelus
Haplotrema concavum
Cionella lubrica
Triodopsis albolabris
Mesodon sayanus
Stenotrema fraternum
Stenotrema leai
Carychium sp.
Strobilops sp.
Paravitrea sp.
a Pupillid and four species of slugs

The group then gradually dispersed, some returning to the dormitory while others said warm farewells with a promise to meet in Washington next year, then heading directly for home or further collecting.

Thus the 26th annual meeting of the AMU came to a glorious close. It was a meeting to be long remembered, particularly for the interest in, and enthusiasm for, our meeting shown by the entire staff of the Redpath Museum. We were really made to feel royally welcome!

RUTH D. TURNER, *Secretary pro tem*

ATTENDING THE 1960 MEETING

Dr. R. Tucker Abbott, Philadelphia
Catherine Ahders, New York City
Lester E. Allen, Yarmouth, Nova Scotia, Canada
Letha S. Allen, Baltimore, Maryland
Mrs. Deltry Bailie and son, Ottawa, Canada
Dr. and Mrs. H. B. Baker, Havertown, Maryland
Mr. and Mrs. Alger P. Blaine, Springfield, Massachusetts
Edward L. Bousfield, Ottawa, Canada
Dr. John B. Burch, Ann Arbor, Michigan
Mr. and Mrs. Emery P. Chace, San Diego, California
Dr. and Mrs. Arthur H. Clarke, Jr., Ottawa, Canada
Dr. and Mrs. William J. Clench, Cambridge, Massachusetts
Mrs. Juliette Compitello, Brooklyn, New York
Vincent Condé, Montreal, Canada
Dr. H. E. Coomans, Netherlands (and New York City)
Mrs. Z. W. Craine, Norwich, New York
Mrs. Robert R. Cull, Brecksville, Ohio
Mr. and Mrs. Anthony D'Attilio, Long Island, New York
Dr. Ralph W. Dexter, Kent, Ohio
Dr. William K. Emerson, New York City
Carl W. Erickson, Auburn, Massachusetts
Mr. and Mrs. H. A. Feinberg
Dr. Elena Martinez Fontes, Merida, Venezuela
Richard W. Foster, Cambridge, Massachusetts
Henry S. Gordon, New York City
Mrs. Mead French, Lomita, California
Mrs. Marion J. Harris, Loring Air Force Base, Maine
William H. Heard, Ann Arbor, Michigan
Rev. and Mrs. H. B. Herrington, Westbrook, Ontario, Canada
Dr. and Mrs. S. C. Hollister, Ithaca, New York
Sylvia Homer, Brooklyn, New York
Mrs. Faye B. Howard, Pacific Palisades, California
Mrs. Anne Hunter, Hackensack, New Jersey
Alice Johnstone, Montreal, Canada
Dr. and Mrs. Edward J. Karlin, Bowling Green, Ohio
Mrs. George F. Kline, Madison, New Jersey
Mrs. Bella Kudatsky, Forest Hills, New York
W. Donald Kuntz, Bridgeport, Connecticut
Mr. and Mrs. Arthur Lawson, Pass-a-Grille, Florida
Mrs. Charles S. Lewis, Webster Groves, Missouri
Mary E. Long, Sonora, California
Mrs. Grace R. MacBride, North Wales, Pennsylvania
Mrs. M. MacNaughton, Montreal, Canada
Col. and Mrs. William A. McCarty, Alexandria, Virginia
Dr. Bruce McCraw, Guelph, Ontario, Canada
Mrs. Gladys McCallum, Westford, Massachusetts
Dr. Albert R. Mead, Tucson, Arizona
Mrs. Lorna S. Melvin, West Newton, Massachusetts
Arthur S. Merrill, Woods Hole, Massachusetts
Charles D. Miles, Tucson, Arizona

Dr. Joseph P. E. Morrison, Falls Church, Virginia
Mr. and Mrs. LeRoy F. Norton, Presque Isle, Maine
Mrs. Ruth Ostheimer, Whitford, Pennsylvania
Dr. and Mrs. E. Laurence Palmer, Ithaca, New York
Dr. and Mrs. Juan Jose Parodiz, Pittsburgh, Pennsylvania
Virginia Orr, Philadelphia
Dr. and Mrs. John W. Parsons and daughter, Baltimore
Mrs. Miriam E. Porter, Geneseo, New York
Mrs. George Raeihle, Elmhurst, New York
Dr. Harald A. Rehder, Washington, D. C.
Mr. and Mrs. Ernest J. Roscoe, Chicago
Dr. and Mrs. Loris S. Russell, Ottawa, Canada
Nelly Sanders, Venezuela
Eugene H. Schmeck, Niagara Falls, New York
Mrs. Luther C. Scull, New Hope, Pennsylvania
Frederick D. Sibley, Boston, Massachusetts
Mrs. Lulu Siekman, St. Petersburg, Florida
Dr. and Mrs. Alan Solem, Chicago
Mrs. Margaret M. Teare, Buffalo, New York
Mrs. James H. Thompson, Arlington, Vermont
Dr. Ruth D. Turner, Cambridge, Massachusetts
Mrs. Alice J. Turnham, Montreal, Canada
Mr. and Mrs. Adlai B. Wheel, Sr., Syracuse, New York
Mr. and Mrs. A. Hunt Wheeler, Penn Yan, New York
Estella Windhorst, Webster Groves, Missouri
Nancy Wisshoff, Montreal, Canada

NOTES, NEWS, NOTICES

The twenty-eighth annual meeting of the American Malacological Union will be held at the U. S. National Museum, Washington, D.C. June 20–24, 1961.

The newly organized National Capitol Shell Club will be in charge of arrangements, and all details will be sent to AMU members with ample time to plan for this annual convention. Washington in June is delightful!

* * * *

After twenty-six annual report bulletins of which no two covers have been alike, the current issue bears the first of a standardized design. Adapted from the attractive letterhead designed for the AMU by Anthony D'Attilio and George Raechle, it features fast-disappearing *Io fluvialis* Say, chosen by the artists as a typically American shell.

* * * *

Ever increasing interest in malacology is borne out by the fact that new clubs are springing up all over the country. In the past twelve months shell-study groups have been organized in Washington, D. C., Seattle, Washington, Miami, Naples and Jacksonville, Florida, Bay City and Port Isabel, Texas and Springfield, Massachusetts.

The 1961 convention of the AMU Pacific Division will be held June 28–July 1 on the Santa Barbara Campus of the University of California. Accommodations will be available at Anacapa Hall, near the Marine Laboratory on the beach. A fine program is being arranged, so reserve the above dates and plan to attend. Detailed information will be sent out early in 1961.

Howard R. Hill, *Chairman*

* * * *

Dr. Rasmus Alsacker of St. Petersburg, Florida, died in that city on June 14th of this year. Born in Norway, Dr. Alsacker practiced medicine in St. Louis and in New York, moving to Florida five years ago. He was an active member of the St. Petersburg Shell Club, owned a fine collection and in 1958 won the Smithsonian Institution award for his fine exhibition of Volutes at the shell show. Although not a member of the American Malacological Union, many AMU members made his acquaintance at various shell auctions where he eagerly sought out those rarities which added to his already fabulous collection.

* * * *

Excerpt from a letter written by Mrs. Beatrice Cole, President, Naples Shell Club: "Many of our members suffered damage to their homes and belongings in the recent hurricane. And contrary to the old saying about the ill wind blowing no good, Donna didn't even loosen any rare shells in the Gulf to leave on our beach. Indeed, that's what most people complained of, rather than their losses."

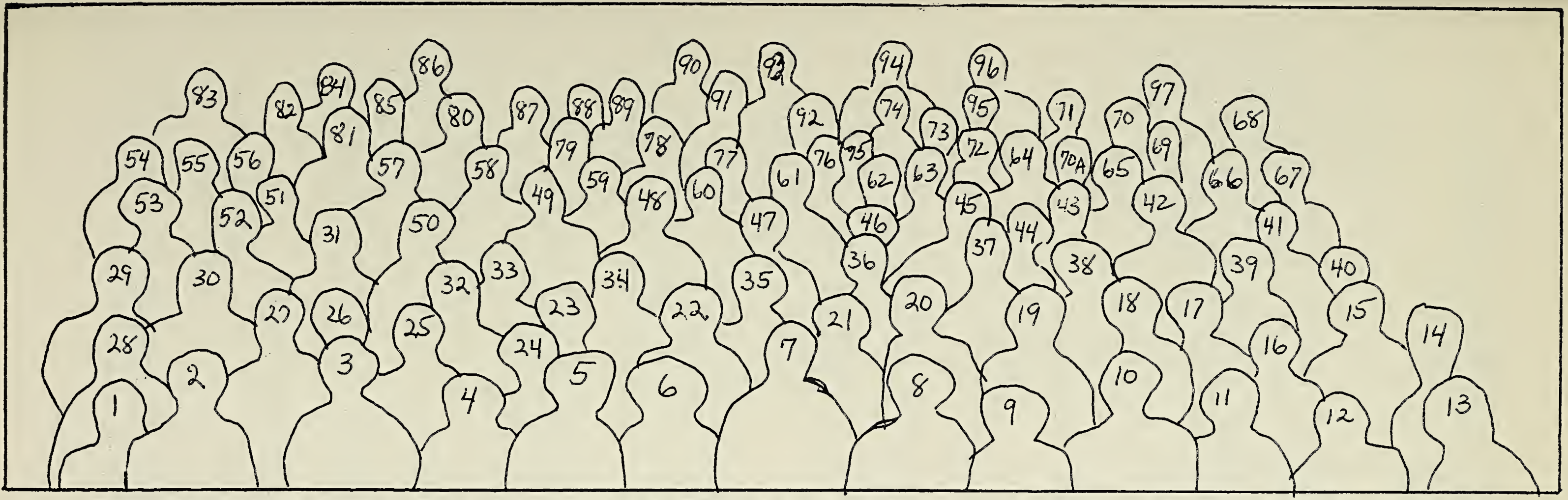
* * * *

The Boston Malacological Club is to be congratulated on having achieved its fiftieth anniversary. The attractive Golden Jubilee booklet reads like a twentieth century of Who's Who of Boston Malacologists. The club was organized in 1910 with these officers: President, Edward S. Morse; Vice-president, Francis N. Balch; Secretary-treasurer, Rev. Henry Winkler; Executive Committee, Charles W. Johnson and John Richie.

On the twenty-fifth anniversary in 1935 it is chronicled that the club secretary, Miss Theodora Willard, concluded her report with: "Let us hope that in the year 1960, the Boston Malacological Club will celebrate its Golden Jubilee." In concluding her summary of fifty years' activities, the current secretary, Mrs. Gladys McCallum says: "May we all feel that we have a part in carrying on the standards and traditions of our Club. We, who are the members now, turn our eyes ahead as did Miss Willard, and say 'Let us hope that in the year 1985, the Boston Malacological Club will celebrate its Diamond Jubilee.' "

To which the AMU adds a fervent "amen!"

ON THE STEPS OF REDPATH MUSEUM MONTREAL CANADA



1. Christopher Bailie, 2. Emery P. Chace, 3. Dr. William J. Clench, 4. Dr. Ruth D. Turner, 5. Mrs. Emery P. Chace, 6. Dr. Katherine van W. Palmer, 7. William Heard, 8. Mrs. C. Lewis, 9. Grace R. MacBride, 10. Lester Allen, 11. Mrs. Miriam E. Porter, 12. Mrs. Margaret Teare, 13. Catherine Ahders, 14. Elsa Nyberg, 15. Anthony d'Atillio, 16. Mrs. Selma Feinberg, 17. Mrs. Anthony d'Atillio, 18. Miss Letha Allen, 19. Mrs. Horace B. Baker, 20. Mrs. Loris Russell, 21. Mrs. Fay Howard, 22. Alger P. Blaine, 23. Miss Mary Long, 24. Mrs. Mead French, 25. Dr. Alfred Mead, 26. Mrs. H. B. Herrington, 27. Virginia Orr, 28. Mrs. Zur W. Crain, 29. Vincent Conde, 30. Dr. John B. Burch, 31. Mrs. William McCarty, 32. Rev. H. B. Herrington, 33. Mrs. Gladys McCullum, 34. Mrs. Alger P. Blaine, 35. Mrs. Bessie B. Harris, 36. Dr. Bruce M. McCraw, 37. Dr. Loris S. Russell, 38. Mrs. Kadtsky, 39. Mrs. Dorothy Raeihle 40. Mrs. Estelle Windhorst, 41. Dr. Nelly Sanders, 42. Mrs. Julier Compitello, 43. Henry S. Gordon, 44. Mrs. Anne Hunter, 45 Dr. A. Byron Leonard, 46. Mrs. A. Byron Leonard, 47. Mrs. Arthur Clarke, 48. Dr. Arthur H. Clarke, 49. Dr. H. E. Coomans, 50. Mrs. Robert R. Cull, 51. Mrs. Wm McCarty, Sr., 52. Col. William McCarty, 53. Mrs. Alice J. Turnham, 54. Adlai B. Wheel, 55. Mrs. Nancy Wosstroff, 56. Mrs. Adali B. Wheel, 57. Mr. Robert R. Cull, 58. Eugene Schmeck, 59. Mrs. Lula Siekman, 60. Mrs. Alan Solem, 61. Dr. Alan Solem, 62. Mrs. Juan J. Parodiz, 63. Dr. R. Tucker Abbott, 64. Donald Kuntz, 65. Mrs. James Thompson, 66. Dr. E .Laurence Palmer, 67. Dr. Elena Martinez Fontes, 68. Dr. Irene Lubinsky, 69. Harold Feinberg, 70. Dr. Harald Rehder, 70a. A. Hunt Wheeler, 71. Dr. Ralph Dexter, 72. Mrs. A. Hunt Wheeler, 73. Mrs. William J. Clench, 74. Dr. William K. Emerson, 75. Dr. Juan J. Parodiz, 76. Ernest J. Roscoe, 77. Mrs. Ernest J. Roscoe, 78. Mrs. John W. Parsons, 79. Miss Gay Parsons, 80. Richard W. Foster, 81. Arthur S. Merrill, 82. Mrs. Edward J. Carlin, 83. Dr. Edward J. Carlin, 84. Miss Alice Johnston, 85. Mrs. Selma Larsen, 87. Mrs. George F. Kline, 88. Mrs. Luther C. Scull, 89. Ruth Ostheimer, 90. Dr. H. B. Baker, 91. Dr. S. C. Hollister, 92. Mrs. S. C. Hollister, 93. Dr. Joseph P. Morrison, 94. Charles Miles, 95. Frederick Sibley, 96. John W. Parsons, 97. Dr Edward Bousfield.

THE AMERICAN MALACOLOGICAL UNION
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1960 - 1961

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Maxwell Smith (1939)
Horace B. Baker (1940)
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Henry van der Schalie (1946–47)
Myra Keen (1948)
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Jeanne S. Schwengel (1952)
A. Byron Leonard (1953)
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Aurèle LaRocque (1958)
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1960 - 1961

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S. Stillman Berry

AMERICAN MALACOLOGICAL UNION—PACIFIC DIVISION

Thirteenth Annual Meeting

Asilomar, Pacific Grove, California June 22-25, 1960

Registration began at noon on Wednesday, June 22, 1960. The afternoon was spent in the living room of the beautiful Surf and Sand, visiting with old friends, meeting new ones, viewing shells on display and those to be auctioned. Gale Sphon is to be highly complimented on his ability to delight the eye with his most interesting displays. At 4:00 P.M. our energetic and capable chairman Dr. Stohler welcomed the group to Asilomar. He explained the purpose of the shell auctions, the proceeds from which are to be used to purchase collapsible display cabinets for the Pacific Division to use at the southern meetings; the University of California had donated three display cases to the Pacific Division for use at the northern meetings, these to be stored at Asilomar until needed.

The shells auctioned were from the Pele expedition, dredged in Hawaii in 1959 and representing one of the largest ecological groups ever assembled. Other shells for auction were from the Bay of Suva, still others donated by John Fitch and Emery P. Chace.

A beautiful specimen of *Harpa Costata* was donated by Jean and Crawford Cate to be used as a door prize, along with some choice shells from the Gulf of California donated by Faye Howard. Numbered tickets were sold as donations with proceeds being used to defray the expenses of the reception and coffee breaks.

A vote of thanks was given the Sacramento Valley Conchological Society for their delightful expression of welcome which greeted each one as they entered their room, an *Arca* shell containing minature flowers. As each person registered they were given a beautifully prepared and labeled box of shells which members of the Sacramento club had collected during trips to the Gulf of California.

Greetings were read from Dr. Katherine V. W. Palmer and Margaret C. Teskey, President and Secretary-treasurer of the American Malacological Union and from several Pacific Division members unable to be present.

It was decided to have all present sign a letter of greetings to be sent to the group attending the coming AMU convention at Montreal. Fay Wolfson and Jean Cate were appointed a committee to draft greetings.

Before dinner a lively shell auction was held with many bidders spurred on by our effervescent auctioneer, Dr. Stohler.

In the evening a reception was given jointly by the Northern California Malacozoological Club and the Sacramento Valley Conchological Society, under the direction of our most capable hostess and chairman, Gladys Archerd and her committee. A cake cleverly decorated with shells, home-made cookies and coffee were served. During the evening moving pictures of marine life in color and of the tides in the Bay of Fundy were shown.

Thursday morning found all eager and ready for the formal sessions which included the following papers. Since one of the speakers was unable to be present, time allowed for his paper was used to have a group picture taken.

VERMETIDAE AND INTERTIDAL ZONATION. A. Myra Keen. (Appeared *Veliger*, Vol. 3, No. 1, July 1, 1960)

AN INTERESTING FREAK ANOMIA. Emery P. Chace.

(Abstract)

Anomias as a group frequently perch on dead *Pecten* shells and if they are on the outer side of the *Pecten* shell they will conform to the ribbing of the host shell. If on the inside of the Pecten or on any other smooth surface the upper valve of *Anomia* is smooth or flat and both valves equally developed.

In the collection of the Natural History Museum at San Diego there is an unusual specimen of *Anomia ephippium* Linn. The very small *Anomia* had settled on the inside of a dead pair of *Pecten opercularis* quite close to the hinge area. The lower valve of the *Anomia* was regularly formed and had copied the slight ribbing on the inside of the *Pecten* valve to which it had been attached. Apparently the upper surface of the *Anomia* was against, and protected by, the opposite valve of the *Pecten* and laid down a very thin glaze on the *Pecten* shell instead of forming an upper valve of its own. The muscle scars and the plug scar show very plainly on the inside of the *Pecten* shell and the hinge area is also plainly marked. The lower valve of the *Anomia* fits perfectly against the *Pecten shell.* The *Pecten* valve is 34 mm high and the lower valve of the *Anomia* is only 28 mm high. It would have been interesting to see what would have happened had the *Anomia* grown to be larger than the *Pecten* shell.

A NEW HAWAIIAN SUBSPECIES OF *CYPRAEA CERNICA* SOWERBY. Crawford N. Cate. (Appeared *Veliger*, Vol. 3, No. 1, July 1, 1960)

AN EPIZOOTIC IN THE GIANT AFRICAN SNAIL.* Albert R. Mead.

(Abstract)

An epizootic of unknown etiology in the giant African snail, *Achatina fulica,* has increased in the Mahinui population in Oahu, Hawaiian Islands, from 14.5% in January 1955 to 83.0% in September 1959. Coincident with this, the size and frequency of occurrence of the typical lesions has increased to the point where, for the first time, specimens have been found with multiple, large lesions all over the exposed portion of the body. Also for the first time, there is an unmistakable reduction in the population. Until this time, the tremendous reproductivity of this snail was sufficient to compensate for the increased death rate. Although the introduced predatory snail *Euglandina rosea* has unfortunately invaded the Mahinui area, for definite reasons it cannot be given credit for the observed population decline in the giant snail. Estivation can increase or decrease the life span of snails. Constant, prolonged unfavorable conditions of even several months' duration will delay the time of natural death. But intermittently unfavorable conditions, or even favorable temperature and humidity factors in the absence of acceptable food, may cause the snail to draw excessively upon its reserves, shorten the period of time it can endure estivation, and predispose of an earlier death.

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* This research is being conducted under N I H Grant E-1245 (C251).

To date, nineteen different invertebrate "enemies" of the giant snail have been introduced into Hawaii.

THE SUBFAMILY *DRUPINAE* (GASTROPODA) IN THE EASTERN PACIFIC. Leo G. Hertlein.

THE OCCURANCE OF *HEMITOMA BELLA* IN MONTEREY BAY. Dustin Chivers.

(Abstract)

In the last year, three shells referable to the species *Hemitoma bella* (Gabb) have been brought to me by SCUBA divers. These specimens were obtained from the northern end of San Jose Creek Beach, State Park, one-half mile north of Point Lobos in Monterey County. A specimen, collected in August 1956, by H. M. Reiswig, measured 64 mm. in length, 44 mm. in maximum width, and 21 mm. in height. The empty shell was taken at a depth of 90 ft. In 1959 two additional individuals were obtained by S. Vanderwort of Oakland. The first specimen collected in February at a depth of 110 ft., measured 70 mm. in length, 55 mm. in maximum width, and 20 mm. in height. In March, while diving at a depth of 125 ft., Mr. Vanderwort obtained a single living individual of *H. bella.* The shell measured 45 mm. in length, 33 mm. in maximum width, and 13 mm. in height.

These three specimens of *Hemitoma bella* (Gabb) represent the first recorded individuals of this scarce species to be collected by SCUBA divers.

OBSERVATIONS OF THE FEEDING BEHAVIOR OF *CONUS CALIFORNICUS* HINDS. Faye Wolfson.

SUBLITTORAL ECOLOGY AND THE MOLLUSCAN ASSEMBLAGE OF KELP BEDS NEAR CARMEL, CALIFORNIA. James H. McLean.

(Abstract)

SCUBA dives along the open coast south of Carmel, California, have been made over a period of one year. Unlike the Southern California kelp beds, beaches are usually absent and the width of the beds is narrow due to rapidly increasing depth. The dominant kelp of the Southern California beds, *Macrocystis pyrifera,* is scarce. The granite walls usually drop to a depth of 10 to 30 feet; a red corraline alga, *Calliarthron cheilosporioides,* carpets the immediate subtidal rock to a depth of about ten feet. Below this zone kelps predominate. Perennial kelps are *Pterygophora californica* on the rock floor and *Laminaria setchelli* on vertical walls. These kelps form a forest with a subsurface canopy. Important annual kelps are *Nereocystis luetkeana* and *Costaria costata.* A dense surface canopy is produced by *Nereocystis* during the summer. *Lithothamnium,* sponges, and tunicates are major encrusting organisms.

Mature *Haliotis rufescens* and *Strongylocentrotus franciscanus,* a large red urchin, are conspicuously absent. California sea otters are known to prey heavily upon these species and this probably accounts for their local extermination. I suspect that the absence of these two grazers allows the luxuriance of algae and sessile fauna that is observed .

The molluscan fauna is rich and conspicuous: excluding intertidal species, I have a total of 60 gastropods, 14 pelecypods, 11 chitons and 1 octopus. 28 of the gastropods are aspidobranch; their biomass is probably over 99% of the gastropod biomass. *Homalopoma carpenteri* and *Tegula brunnea* are the two most abundant gastropods. *Laminaria* and *Pterygophora* serve as substrate for a number of gastropods, but the surface canopy of *Nereocystis,* unlike *Macrocystis,* does not.

MONOGRAPH ON THE SPECIES OF THE GENUS *THYCA*. S. Stillman Berry.

This paper completed the afternoon session, and all assembled in the living room for another shell auction.

In the evening Mr. Ellis Berry, Supervisor of the Wildlife Protection Branch of the California Department of Fish and Game addressed the group. His topic, "Aspects of Law Enforcement in the Department of Fish and Game" was forceful in stressing the importance of protecting the wild life in order to prevent extinction of many species of mollusks. Thus licenses required to take abalones, several species of clams and crabs with a further limitation in numbers to be taken. A special scientific collector's permit is required for those wishing to collect marine specimens out of season, undersized or in quantity.

Faye Howard showed some unusual colored slides of marine life she had collected on her many trips to the Gulf of California and to Alaska.

Friday morning found many energetic members ready at 4:15 to go on a collecting trip to Point Pinos, led by Dr. Stoher. All returned in a jovial mood regardless of the fact that they had been up so early, collecting had not been too exciting nor the fog too inviting.

The forenoon session began with the following:

THE RIDDLE OF THE BIVALVE GASTROPOD. A. Myra Keen. (Appeared in *Veliger,* Vol. 3, No. 1., July 1, 1960)

SOME CONCHOLOGISTS I HAVE KNOWN. Howard R. Hill.

(Abstract)

Personal glimpses of four interesting conchologists (all deceased): 1. Dr. William A. Bryan, former Director of Los Angeles County Museum; ardent collector, author and specialist on the Natural History of Hawaii. Comprised a valuable check list of the marine shells of Hawaii which is still in manuscript form. 2. Dr. R. H. Tremper, early Los Angeles collector and prominent member of the Conchological Club of Southern California. Employed dental tools in the cleaning of shells. 3. Dr. E. W. Thwing, retired Los Angeles missionary with previous experience in the collecting of Hawaiian land shells. Published important monograph on the Achatinellidae. 4. Dr. Carlos de la Torre, eminent Cuban naturalist, author of many books and papers. Foremost authority on Cuban land shells.

A SYSTEMATIC STUDY OF THE GASTROPOD FAMILY RISSOINIDAE. Priscilla J. Militante.

(Abstract)

The representatives of the family Rissoinidae are submicroscopic marine gastropods with a size range of approximately 2 to 15 mm. (height).

A study of the classification of the family into main generic groups was presented and its general relationship to the other members of the superfamily Rissoacea shown.

EXPERIMENTS WITH EXTRACTS FROM VARIOUS PORTIONS OF *CONUS CALIFORNICUS* HINDS. Faye Wolfson.

THE GENUS *PECTEN* IN THE NEW WORLD. Daniel Druckerman.

(Abstract)

Although the Caribbean and the Eastern Pacific are presently separated by land and are distinct faunal provinces, this has not always been the case; a seaway termed by Olsson (1932) the Bolivar Geosyncline having connected the two bodies intermittently until the close of the Miocene. The resemblances of fossil and living Eastern Pacific and Caribbean species of the genus *Pecten* to one another appears to suggest common ancestry. A statistical study of intraspecific variation and a comparison of such features as rib count and value proportion ratios resulted in the recognition of eight species and subspecies of the subgenus *Euvola,* eight species of a new subgenus, and two species of the subgenus *Pecten s. s.* and appears to indicate that Eastern Pacific and Caribbean species of these subgenera are closely related.

LATIN AS SHE IS SPOKE. George P. Kanakoff.

(Abstract)

In conchology two languages are used: the native and Latin. It is unfortunate that in the United States scientists commonly mispronounce and misspell Latin words that they use daily. This "Americanized" version of Latin is as unacceptable to a well-schooled Latin student and as unintelligible as "Russianized" English is for the American scientist to understand. In the near future most scientific gatherings will be on an international level; therefore it behooves the scientist to correct his erroneous Latin in order to present his results in an understandable manner. Latin can be thought of as "the common denominator" among scientists and for that reason should be used correctly.

Language is *speech* or the combination of *sounds* and representative symbols which over the centuries have been evolved as a means of communication. Because a language or speech goes through a process of *evolution,* it *changes.* Scientific Latin is a dead language in the respect that it was arrested at one point in its evolution. This is the Latin of the "Golden Period" of classics. This does not mean it is not being used. Latin is used daily by over 9,000,000 people of the Catholic religion.

A language in the juvenile stage of its evolution is strictly one of sounds conveyed solely by word of mouth. Later, as man devises symbols for sounds,

concurrent rules of pronounciation and grammar evolve. The end product of the evolution is either a phonetic language or one in which the symbols can stand for more than one sound, such as English. Fortunately *Latin is a phonetic language* and as such should present no problems as to pronounciation since *each letter stands for only one sound.* Latin pronounced in the light of the numerous possible sounds of each English letter is almost unintelligible.

By the use of several charts the writer explained the proper pronounciation of common scientific names and other Latinized terms used commonly in conchology and malacology.

NOTES ON THE TAXONOMY OF THE PELECYPOD GENUS *CORBULA* BRUGUIERE. John Q. Burch. (To appear in *Veliger,* Vol. 3, No. 2, October 1, 1960)

ON GONDWANA AND THE HALIOTIDS. Robert R. Talmadge. (Appeared *Veliger,* Vol. 3, No. 1, July 1, 1960)

FLUCTUATIONS IN MOLLUSK POPULATIONS AFTER A RED TIDE IN THE ESTERO DE PUNTA, BAJA CALIFORNIA, MEXICO. Rudolph Stohler. (Appeared *Veliger,* Vol. 3, No. 1, July 1, 1960)

Papers were suspended at this point, and the annual business meeting was called to order at 4:30 P.M., Dr. Rudolf Stohler, Chairman, presiding. A motion was made and carried to accept the minutes of the 1959 Pacific Division meeting as printed in the annual bulletin of the American Malacological Union.

An incomplete treasurer's report showed total receipts of $109.16, of which $25 had been advanced from the AMU treasury and $84.16 received from the 1959 treasurer. Expenditures of $124.08 had left a deficit of $14.92. This report was accepted as read with a revised report to follow.

After lengthy discussion on establishing a definite roster of AMU members into the Pacific Division, dues and per capita from AMU, the following motion was made by Past--chairman Dr. Albert R. Mead: that the American Malacological Union be requested to make a study of its membership; and further, that based upon the number of members living west of the Rockies, (Pacific Division), the American Malacological Union determine what is an equitable share of the dues received each year (per capita share) and to disburse this share to the Pacific Division for its use. This motion was seconded and unanimously passed.

A further motion requested dues for the Pacific Division to be increased to $2.50 per year, the additional fifty cents to be deposited with the treasurer of the Pacific Division.

A letter from Merton Hinshaw inviting the Pacific Division to use the facilities of Bowers Memorial Museum at Santa Ana was read. It was decided to leave the selection of the 1961 meeting site to the new chairman and his executive council.

Mr. and Mrs. Emery P. Chace were elected delegates to the AMU meeting in Montreal.

Mr. Howard Fletcher reported on his study of display cabinets, size, material to be used and cost per unit. He offered to make the cabinets at the material cost, donating his labor. The motion was made and carried that Mr. Fletcher's offer be accepted and that as many cabinets as might be financed by the shell auction be constructed. These cabinets are to be the sole property of the Pacific Division and may be used by others only upon special dispensation of the Pacific Division, between sessions. Dr. Berry stated that he would sponsor one case and donate same to the association.

John Strobeen reported that he had visited our faithful member Andrew Sorenson, and found him to be critically ill. A motion was made and carried that the following resolution (drawn by Myra Keen and Rose Burch) be adopted: "The members of the AMU-PD, at the 13th annual meeting, send you their greetings and good wishes. We recall with pleasure the AMU meeting of 1947. Your generosity as host made us realize that the West Coast group needed an annual meeting, so that it was your stimulation that led to the organizing of the AMU-Pacific Division. We are all grateful to you."

The nominating committee (John Fitch, Allyn Smith, Dr. Leo Hertlein) presented the following slate: Chairman, Dr. Howard R. Hill; Vice-chairman, Robert W. Talmadge; Secretary, Dorothy Brown; Treasurer, Jean Cate. It was moved and carried that nominations be closed and that the slate of officers as read be accepted.

The business meeting was then adjourned until Saturday morning and numbers were drawn for the prize shells. First prize *Harpa costata* was won by Dr. Albert R. Mead, others fell to Gale Sphon and Carolyn Strohbeen. Other numbers were drawn for shells donated by John Fitch who also provided specimens of *Lyropecten subnadosus* for everyone present.

Ninety-two attended the banquet in the evening. The tables were beautifully decorated by Hazel Jeschien and her committee, and each diner was presented with small envelopes containing fifteen species of west coast *Acmaea*. Place cards with flowers, made of minute shells, were the artistic work of Ira Ney.

Dr. Stohler thanked his committee for a splendid job in making this convention outstanding. The chairmen were introduced:

Crawford Cate (auction); Edwin C. Allison (equipment); Gale Sphon, Jr. (exhibits); Marianna Paulson (hospitality); Henrietta Rosman (publicity); Helen Hunt (reception and information); Gladys Archerd (refreshment); Lucille Zellers (registration); Hazel Jeschien (table decorations).

Members from out-of-state were Dr. Albert R. Mead, Arizona; Mrs. Lela Griffith, British Columbia, Canada; Stella Mulvania, Florida; Beatrice Sabourin, Effie Forthun, Dr. and Mrs. Phil Spicer, Washington; Mrs. Frances Lewis and Miss Estelle Windhorst, Missouri.

The following shell club presidents were introduced: Miss Katherine Shuman, Long Beach Shell Club; Mrs. Lois McMakin, Sacramento Valley Conchological Society; Crawford N. Cate, Conchological Club of Southern California.

Dr. A. Myra Keen was presented with an orchid and made Honorary Sergeant-at-Arms for the evening. She was asked to bring Mr. and Mrs. Emery P. Chace to the chairman, who then presented them with an award of merit "in recognition of their long and fruitful devotion to conchology, their kindly interest in younger students and their unfailing generosity to all."

Mrs. Chace became a member of the "Tuesday Shell Club", a forerunner of the Conchological Club of Southern California, in 1914. She was elected secretary in 1916, and about that time men were admitted to the club; the first group to be elected included Allyn G. Smith and Emery P. Chace. Emery began publishing short notes on his observations of mollusks in *Nautilus* in 1914; in 1919 he and Mrs. Chace wrote their first joint paper, "An unreported exposure of the San Pedro Pleistocene" in *Lorquinia.*

The Chaces have made many collecting trips which have taken them from southern California to northern Washington; their specialty: west coast mollusks. In recent years they also have become interested in the fauna of the Gulf of California and have made numerous field trips to the northern end of the Gulf.

Elsie and Emery Chace, throughout most of their lives, have been amateurs in the best sense of the word—students in this field because they loved the work. Since Mr. Chace's retirement, they have been given professional status at the San Diego Museum of Natural History.

Speaker for the evening was Dr. Donald P. Abbott, Associate Professor of Zoology at Hopkins Marine Station, Pacific Grove. His topic, "A cross section through a South Pacific Atoll" was well received; all present were extremely interested in Dr. Abbott's description of native and marine life on Ifaluk. His beautiful color slides and underwater shots are long to be remembered.

Saturday morning's session began with:

THE BIVALVED OPISTHOBRANCHS AND THE PROBLEM OF FORM. Patrick Milburn.

(Abstract)

This paper outlined the two ideas governing our thoughts about form, that of *homology* (structural identity) and relationship, and that of convergence and parallels, and applied these ideas to a discussion of the bivalved opisthobranchs. Most suggestions about these animals were seen either to reflect the idea of homology or to consider parallels unimportant. Novikoff's terms, *homoilogy* (a homologous parallel) and *isomorphy* (a non-homologous parallel), were utilized to point out that *Berthelinia* and pelecypods are homoilogous while *Berthelina* and *Hipponix* are isomorphous. A classification of parallel form, being devised by Novikoff and others as a separate system from the usual classification of species, was discussed and an implication of it was seen to be the eventful power to predict the fundamental forms of living creatures throughout the universe.

CLIPPERTON ISLAND REVISITED. Edwin C. Allison.

(Abstract)

A second visit to Clipperton Island during the Summer of 1958 has permitted an elaboration of a study of that isolated eastern Pacific atoll initiated by the reconnaissance of 1956. Molluscan and other aspects of the mixed Eastern Pacific and Indo-Pacific fauna are more thoroughly known through the collecting efforts of a larger scientific party and by the success of diving activities. Storm waves which struck the island during the two years separating the two Clipperton expeditions washed onto its beaches many species which were found living only at depths exceeding 20 meters and which were unrepresented in earlier collections.

FURTHER REMARKS ON THE INTERPRETATION OF THE MOLLUSCA. Patrick Milburn. (To appear in *Veliger*, Vol. 3, No. 2, October 1, 1960)

This completed the presentation of papers. The business meeting was recalled to order and the matter of Honorary Memberships was discussed. Several ideas were exchanged with the following motion being made, seconded and carried: That a recommendation be made to future chairmen of the Pacific Division that, after consultation with the Executive Council (Committee), they may make each year an award or citation to a person or persons who have contributed in some outstanding way to malacology. Normally, this should be to an individual or married couple, but it might, under special circumstances, be made to a small group of persons who had been closely associated in a research project.

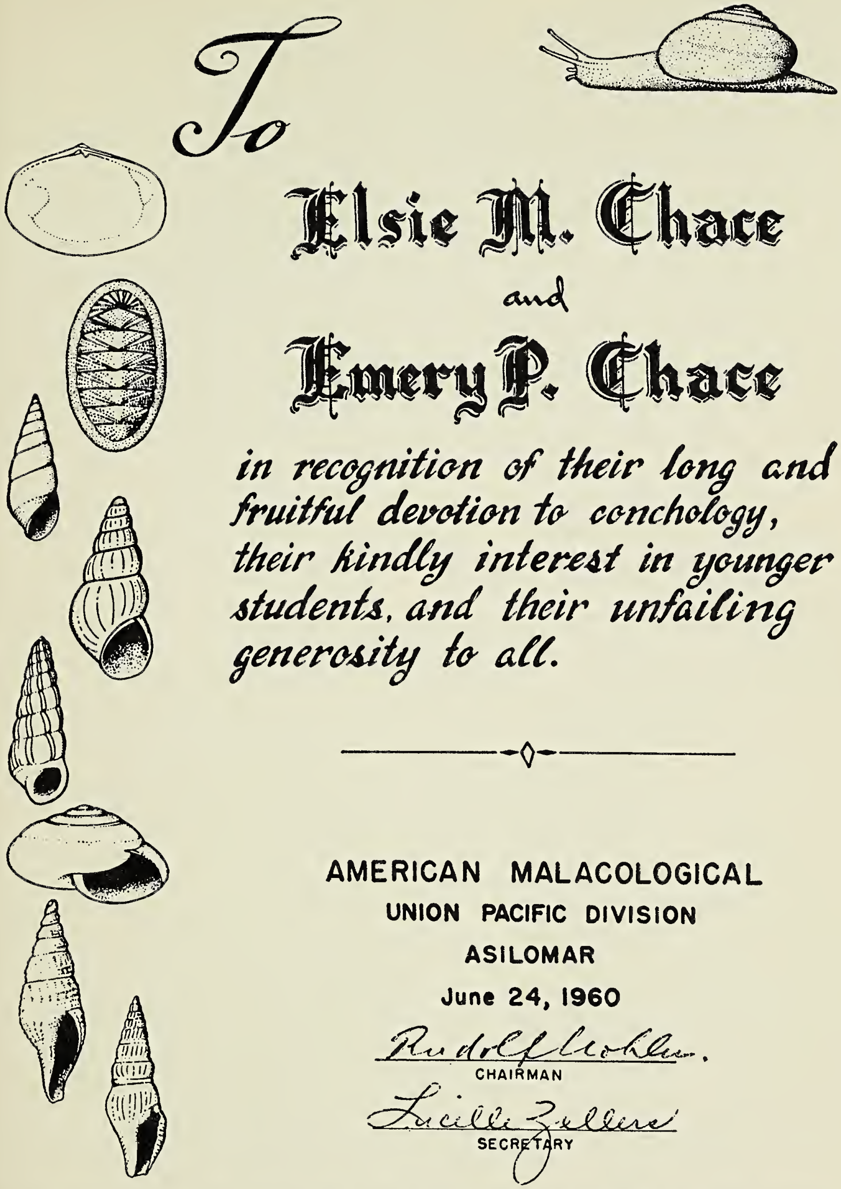
The secretary announced a total registration of 96. Dr. Stohler again thanked all for having made this convention one of lasting memories, then presented the gavel to Dr. Howard R. Hill, Chairman-elect for 1961, after which the Thirteenth Annual Meeting was adjourned.

Lucille Zellers, *Secretary*
American Malacological Union, Pacific Division

Registration for the American Malacological Union—Pacafic Division Convention at Asilomar, Pacific Grove, California

Edwin C. Allison, Berkeley, California
Mrs. Gladys Archerd, Berkeley, California
Mrs. Wanda Averill, San Jose, California
Dr. S. Stillman Berry, Redlands, California
Mr. and Mrs. Glen Bickford, Morro Bay, California
Mrs. Dorothy Brown, Los Angeles, California
Mr. and Mrs. John Q. Burch, Los Angeles, California
Mr. and Mrs. Crawford N. Cate, Los Angeles, California
Mr. and Mrs. Emery P. Chace, San Diego, California
Dustin Chivers, San Bruno, California
Commander Christensen and son Carl, Redlands, California
Mr. and Mrs. Keith Cox, Woodside, California
Mr. and Mrs. Percy Demuth, Sacramento, California
Daniel Druckerman, Mill Valley, California
Mrs. Bertha Finke, Sacramento, California
Mrs. Ruth C. Finley, Sacramento, California
Mr. and Mrs. John E. Fitch, San Pedro, California
Mr. and Mrs. Howard Fletcher, Redlands, California
Edna Fletcher, Redlands, California
Effie R. Forthun, Seattle, Washington
Mr. and Mrs. Mead French, Lomita, California
Mr. and Mrs. Hiram Goodwin, Albany, California
Dr. Wendell O. Gregg, Los Angeles, California
Mrs. Lela M. Griffith, Egmont, British Columbia, Canada
Victor Haack, San Francisco, California

Ruthe Harris, Los Angeles, California
Dr. Leo G. Hertlein, San Francisco, California
Dr. and Mrs. Howard R. Hill, Los Angeles, California
Merton Hinshaw, Santa Ana, California
Christine Hoskins, Healdsburg, California
Harold Hoskins, Healdsburg, California
Mrs. Lucile Hoskins, Healdsburg, California
Mrs. Faye Howard, Pacific Palisades, California
Mrs. Helen Hunt, Berkeley, California
Mrs. Elsie Hutson, Sacramento, California
Mrs. Hazel Jeschien, Berkeley, California
George P. Kanakoff, Los Angeles, California
Dr. A. Myra Keen, Palo Alto, California
Dr. and Mrs. Homer P. King, Los Angeles, California
Mrs. Hazel Kolb, Healdsburg, California
Mrs. Mary Larson, Concord, California
Mrs. Charles S. Lewis, Webster Groves, Missouri
Mary E. Long, Sonora, California
James H. McLean, Stanford, California
Mrs. Lois McMakin, Sacramento, California
Dr. Albert R. Mead, Tucson, Arizona
Patrick Milburn, Corona del Mar, California
Priscilla J. Militante, Stanford, California
Frank Moore, Redlands, California
Stella Mulvania, Pensacola, Florida
Mr. and Mrs. Ira W. Ney, Oakland, California
Jens M. Ostergaard, Mountain View, California
Mrs. Marianna Paulson, Berkeley, California
Mae Dean Richart, San Francisco, California
Mr. and Mrs. Frank Russ, Alameda, California
Beatrice Sabourin, Seattle, Washington
John Saxby, San Francisco, California
Katherine Shuman, Seal Beach, California
Charlotte Shuman, Seal Beach, California
Gale G. Sphon, Jr., Bellflower, California
Dr. and Mrs. Phil Spicer, Centralia, Washington
Mabel Sterns, Mentone, California
Dr. Rudolf Stohler, Berkeley, California
Mr. and Mrs. John Strohbeen, Santa Cruz, California
Ray Summers, Petaluma, California
Robert R. Talmadge, Willow Creek, California
Mrs. Wyllie Taylor, Roseville, California
Lynne Taylor, Roseville, California
Dr. Jack Tomlinson, San Francisco, California
Mr. M. L. Walton, Glendale, California
Evelyn Wilson, Oakland, California
Estelle Windhurst, Webster Groves, Missouri
Mrs. Faye Wolfson, San Diego, California
Mrs. Lillie Wyatt, Berkeley, California
Vern Yadon, Pacific Grove, California
Mrs. Lucille Zellers, El Cerrito, California
Philip Zentner, Sacramento, California



To

Elsie M. Chace

and

Emery P. Chace

in recognition of their long and fruitful devotion to conchology, their kindly interest in younger students, and their unfailing generosity to all.

AMERICAN MALACOLOGICAL
UNION PACIFIC DIVISION
ASILOMAR
June 24, 1960

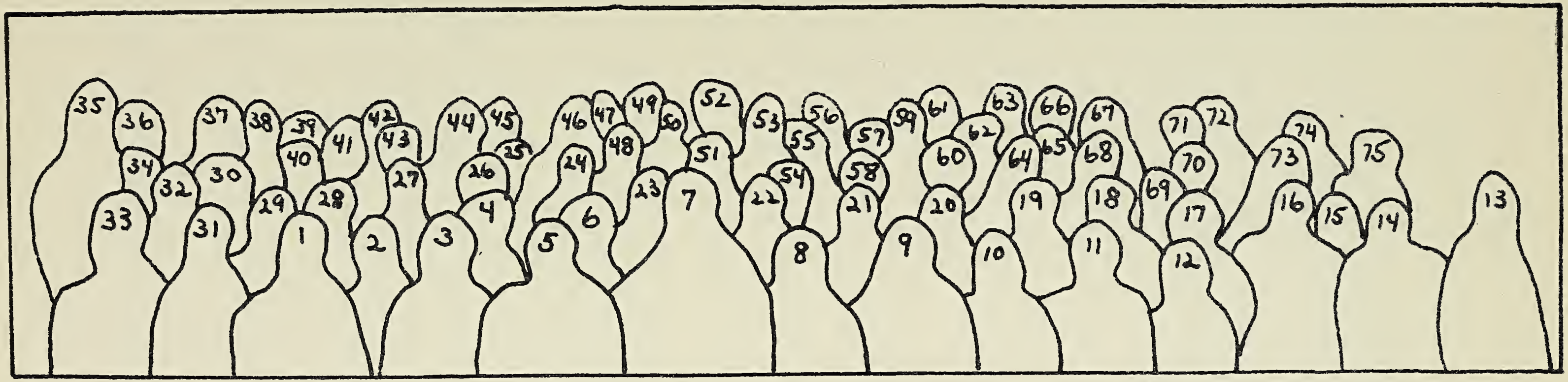
Rudolf Stohler
CHAIRMAN

Lucille Zeller
SECRETARY

Above is the first of a series of awards with which the Pacific Division proposes to honor those who have contributed in an outstanding way to malacology. This year the recipients were Elsie and Emery Chace, dedicated amateurs whose long service to the cause of science richly deserves such recognition. The shells figured on the plaque have all been named for the Chaces and are, reading downward, *Monadenia chaceana* Berry 1940, *Erycina chacei* Dall 1916, *Mopalia chacei* Berry 1919, *Goniobasis chacei* Henderson 1935, *Pomatiopsis chacei* Pilsbry 1937, *Opalia chacei* Strong 1937, *Micrarionta chacei* Willett 1940, *Moniliopsis chacei* Berry 1941, *Crassispira chacei* Hertlein and Strong 1951.

(Photo by Livingstone)

AT ASILOMAR, PACIFIC GROVE, CALIFORNIA, JUNE 23, 1960



1. Lucille Zellers, 2. Wyllie Taylor, 3. Jean Cate, 4. Faye Wolfson, 5. Dr. Rudolf Stohler, 6. Mae Dea Richart, 7. Dr. Howard Hill, 8. Evelyn Wilson, 9. Hazel Kolb, 10. Priscilla Militante, 11. Harold Hoskins, 12 Christine Hoskins, 13. Faye Howard, 14. Mead French, 15. Ruth French, 16. John Q. Burch, 17. Lucile Hoskins, 18. Emery P. Chace, 19. Elsie Chace, 20. Mary Larson, 21. Mary Long, 22. Mrs. Homer P. King, 23. Effie Forthum, 24. Lois McMakin, 25. Helen Hunt, 26. Bertha Finke, 27. Mrs. Ernest Keen, 28. Amzel Spicer, 29. George P. Kanakoff, 30. Lynne Taylor, 31. Ruthe Harris, 32. Lela Griffith, 33. Victor Haack, 34. Philip Zentner, 35. Ray Summers, 36. Phil Spicer, 37. Dr. A. Myra Keen, 38. Dr. Homer P. King, 39. Mrs. Frances Lewis, 40. Eva Maye Fletcher, 41. Mrs. John Strohbeen, 42. Miss E. Windhurst, 43. Edna Fletcher, 44. Mrs. Percy Demuth, 45. Mabel Sterns, 46. Percy Demuth, 47. Howard Fletcher, 48. Rose Burch, 49. Dr. Leo Hertlein, 50. Wanda Averill, 51. Marianna Paulson, 52. John Strohbeen, 53. Beatrice Sabourin, 54. Stella Mulvania, 55. Hazel Jeschien, 56. Frank Moore, 57. Gladys Archerd, 58. Charlotte Shuman, 59. Jens M. Ostergaard, 60. Mrs. Howard Hill, 61. Gale Spohn, Jr., 62. Lilly Wyatt, 63. Frank Russ, 64. Dr. Albert R. Mead, 65. Elsie Hutson, 66. Jim McLean, 67. Dorothy Brown, 68. Dr. S. Stillman Berry, 69. Carl Christenson, 70. Robert R. Talmadge, 71. Edwin C. Allison, 72. Crawford N. Cate, 73. Bob Talmadge, 74. Hiram Goodwin, 75. Katherine Shuman, 76. Mrs. Hiram Goodwin.

MEMBER CLUBS

HAWAIIAN MALACOLOGICAL SOCIETY, Elizabeth Harrison, Corresponding Secretary.

Our most outstanding accomplishment was the change to offset printing for *Hawaiian Shell News* in January, 1960, and at the same time the start of President Cliff Weaver's series on Hawaiian marine mollusks. As a result of the combination, our membership has grown to roughly 480! What's more, still growing.

Our next big project was the publication of *Helpful Hints for Shell Collectors,* a monograph now in the process of being put on permanent plates, after numerous corrections and additions. The project has been frought with set-backs, but will be available in corrected form ultimately.

A current project is re-cutting of stencils of all the back issues of *Hawaiian Shell News* so that soon after January, 1961 complete files of this publication will be available to whoever wishes to purchase. Applications accepted now.

In February, 1960 we held our third annual Shell Fair which lasted two weeks. A great deal of work for all involved but a grand success. For the second year the Smithsonian Award went to Dr. C. M. Burgess for his display of endemic Hawaiian shells.

The same set of officers will steer the Society through 1961, all being willing to see several just-started projects through to completion: President, Clifton S. Weaver; Vice-president, James W. Andrus; Treasurer, Gertrude Andrus; Assistant-treasurer, Donald von Geldren; Recording Secretary, Mrs. Harold M. Baker; Corresponding Secretary, Elizabeth Harrison; Publication Committee: Karl W. Greene, Olive Schoenberg, Spencer W. Tinker.

THE GREATER BALTIMORE SHELL CLUB, Mary Ruth Buchness, Secretary.

The Greater Baltimore Shell Club held most of its meetings of 1959–1960 at the Natural History Society of Maryland with whom it is associated.

The executive committee of the Shell Club for this year is: Chairman, Mr. William F. Seip; Vice-chairman, Miss Letha S. Allen; and Secretary-Treasurer, Mrs. Frederick G. Buchness.

The group viewed various private collections, reviewed literature on mollusks, identified shells, held a variety of discussions, and attended lectures on mollusks. Much activity centered on organizing a seashell exhibit now on display at the Maryland House in Baltimore's Druid Park. This exhibit, open to the public, shows the more common species of mollusks of the west Atlantic Coast from Cape Sable, Nova Scotia to Cape Sable, Florida. The specimen shells are those donated by Dr. and Mrs. John W. Parsons and other friends and members of the Shell Club and the Natural History Society, and those from the Hadley collection.

A field trip was held in July 1960 to the Solomons Island Marine Biological Laboratory at Solomons Island, Maryland, where a tour of the laboratory was made, and some fossil collecting in this well supplied area of Miocene fossils was done.

The Baltimore Shell Club continued to enlarge the Dept. of Mollusk library at the Natural History Society of Maryland by supplementing it with new shell books.

ST. PETERSBURG SHELL CLUB, Gertrude E. Brakefield, Corresponding Secretary.

We have nine regular meetings each year plus a Christmas meeting (shell exchange party) which is held in the Historical Society Museum; regular meetings are held in the Assembly Room of City Hall.

Instructive and interesting features during the past year were—"Collecting Small Shells", Dan Steger; "Taxonomy and the Importance of Scientific Nomenclature", Edna Marcott; "Where and How to Find 'Em", Roger Dunn; "Cleaning Shells for Display", Frank Lantier; "Shellcraft and Work with Schools", Gertrude Weber; "Colored Slides of Living Mollusks", Ted and Florence Kuczynski; "Preparation of a Florida Check List", Dr. Francis A. Smith; "Story of Interesting Shells", Mina Slinn; "How to Build a Fine Collection on a Small Budget", Harry Faulkner; Cataloguing Your Collection", Dorothy Hanssler. Colored slides were shown by Dan Steger at the meetings.

Led by Alger Blaine, the field trips are a popular feature of each season and always well attended. The annual picnic was held on the Sunshine Skyway, and Mrs. Oma Cross, Curator of the St. Petersburg Historical Society Museum entertained the club at the end of the year. Beautiful pictures were shown by the Audubon Society and the Kuczynskis—Ted and Florence—took us on a trip to Washington, D.C. via colored slides.

The annual shell show in 1960 consisted of about fifty exhibits. Dr. Joseph P. E. Morrison, Dr. Alan Solem and Axel A. Olsson acted as judges and a general collection of shells prepared by Miss Mina Slinn received the Smithsonian Institution Award.

Officers for the coming year (re-elected) are: President, Francis A. Smith; 1st Vice-president, Percy A. Slinn; 2nd Vice-president, Dorothy Hanssler; Treasurer, Roger V. Dunn; Recording Secretary, Barbara Steger; Corresponding Secretary, Gertrude E. Brakefield.

PACIFIC SHELL CLUB, Grace Forbes, Recording Secretary.

The meetings of our club for the past year have been both profitable and interesting and we have an ever-broadening view of the vast possibilities of collecting sea life. A variety of beautiful and interesting shells from the collections of our guest speakers have been on display at various times, and an auction of shells donated by members and friends gave opportunity of adding new species to our own collections. We heard many reports of shelling trips made by members during the year, and shells donated by them and by our friends were drawn as prizes or generally distributed.

We have changed the location of our meeting place. We now meet at 2:00 P.M. on the third Sunday of each month (October to May) at the Crenshaw Community Center, 3820 Santa Rosalia Drive, Los Angeles. A standing invitation is extended to all who are interested in the study of conchology to visit our club whenever possible. A pot luck buffet was substituted for the usual picnic at the close of the season.

Dr. Howard R. Hill who has sponsored the Pacific Shell Club since its beginning sixteen years ago has retired as Curator of Marine Zoology at the Los Angeles County Museum, but has kindly consented to continue as sponsor.

Officers for 1959–60: President, Ralph Kettenring; Vice-president, Raymond Holley; Treasurer, Isaac Cowgill; Recording Secretary, Mrs. Grace

Forbes; Corresponding Secretary, Mrs. L. H. Poorman; Sponsor, Dr. Howard R. Hill.

CONNECTICUT SHELL CLUB, Gertrude W. Thompson, Secretary.

We met nine times the past year, at the Peabody Museum on the second Friday of the month. Since our president is curator of shells there he is able to show us many fine shells which otherwise we would never see. We have been privileged thus to view the fabulous collection of the late Heathcote Woolsey.

One of our members told us of collecting in Panama and added gift shells to our collection, another who winters in the Florida Keys, after telling us of how he adds to his own fine collection of *Liguus* generously supplied samples to his audience. A guest from Tucson, Arizona told of the shells she displays in the class rooms of grade schools in her city, and we hear at times from Mrs. Ruth Craine who travels widely in adding to her collection.

Other highlights of the past year was a talk on shells of Australia by Mrs. June Ross of the Peabody Museum staff, an accounting by Dr. Willard Hartman of Yale of collecting in the Seyschelles with Dr. Alan Kohn, slides and a talk by Mr. Max Zappe of a recent trip to the island of the Caribbean and a meeting at which Mr. Earl Reed, President of the newly-organized Connecticut Valley Shell Club told us of collecting in Nova Scotia.

In July our club combined a field day and a picnic at Horse Island near Stoney Creek, Connecticut; we are collecting shells of our state to add to the museum collection.

We regret that none of our members attended the AMU meeting at Montreal, but there will be another year and another meeting.

CONNECTICUT VALLEY SHELL CLUB, Earl H. Reed, President.

Our club was organized in September, 1959 with nineteen charter members. We meet at 8:00 P.M. on the second Monday of each month at the Museum of Natural History, 236 State Street, Springfield, Massachusetts. Dues are $2.00 per year plus a $1.00 application fee. Officers are: President, Earl H. Reed; Vice-president, John E. Fleming; Secretary, Mrs. Helen B. Burt; Treasurer, Mrs. Martha Menard.

THE NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Joseph Rosman, Recording Secretary.

Regular meetings are held in the Life Science Bldg. on the U.C. Campus at Berkeley, on the first Tuesday of the month. Present membership, 90.

With both a broadened scope of interests and the stimulation created by our publication, "The Veliger" (which has grown like Topsy since its first issue in June 1958), this has been a year of exciting and provocative learning for members.

Outstanding event in February: we were the guests of Dr. A. Myra Keen, in her special domain at Stanford University. Her show of slides along with her talk on the pearl industry, from inception to the priceless gem stage; the use of female labor in Japan to accomplish these processes, and the minute details involved were of considerable interest to us all. A beautiful display of unusual shells; gifts to us of uncommon land snails and tasty refreshment made the trip a memorable one.

"Some Aspects of the Evolution of Oceanic Islands with comment on

Their Fauna" was narrated by Dr. William Newman, Department of Zoology at U.C., Berkeley, this accompanied by slides. Another guest, Dr. F. Sterns MacNeill, of the U.S. Geological Survey, discussed "A Study of Genus *Neptuna*", using charts to correlate specimens and their distribution with the geological periods. Dr. Rudolf Stohler provided an exciting thrill to the evening with the showing of colored films (taken by Dr. Hoffman of UCLA) of the experiments in Conus feeding undertaken by Dr. Saunders (also of UCLA), during which surprising facts were collected. Another film on Nudibranchs showed off the beauty of the species. Allyn Smith, of The Academy of Science in San Francisco, discussed land snails of the Bay Area, and displayed an excellent sample case of land snails from many areas. Joan Steinberg, assisted by Jane Westphal (both of the U.C. Zoology Department) gave an illustrated lecture on Apisthobranchia, to which our club member Virgil Herring added some slides of rare clarity and beauty. Keith Cox, Marine Biologist, (Fish and Game Commission, Calif.) spoke on the Early History of Abalones, and the controversy between commercial and sportsman fishing aspects. His slides pertaining to Alaska, Baja California, and divers and their equipment were very much enjoyed. Dr. Orin Orcutt (Biological Investigation Supervisor (Fish and Game Commission) talked to us (slides) about "Oystering in California", covering the seed growing in Japan and its import for culture in the USA. Victor Zullo (Department of Paleontology, U.C. Berkeley) specified barnacle data including genera, methods of distinguishing species, ecology and geographical distribution.

Displays by club members are made at each meeting. Among them were shells from Mexico, Japan, Africa; shell oddities from many countries; and in connection with 10 minute talks, volutes; turretelidea and terebidea; abalone, local and world-wide; land snails (Calif. backyard), and shells from the Phillipines. In a review of their trip to Cholla Bay, Lucille Zellers, representing the 4 members, showed a considerable assortment of the fruitful collection available there. Marianna Paulson's junior shell club won honors in a hobby show with their original presentation. In addition there were talks on classification and arrangement of shells; shell exhibits, as social events, in members homes; several shell collection trips to Pacific Beaches, and reviews of books and magazines related to mollusks.

As usual, our December gathering was for a Xmas Party at the lovely colonial home of the gracious Mr. and Mrs. Philip Bancroft, with everyone having a grand time.

The new officers for 1960 are: President, Mr. J. M. McWilliams; Vice-president, Joseph Rosman; Recording Secretary, Gretchen Loren; Corresponding Secretary, Margarete MacWilliams; Membership Chairman, Wanda Averill; and Treasurer, Phoebe Balch.

THE NEW YORK SHELL CLUB, Catherine Ahders, Recording Secretary.

We have completed our eleventh year under George Jacobs as President, Josephine Wichern as Vice-President, Mathilde Weingartner as Treasurer, Grace McDougall as Corresponding Secretary, and Catherine Ahders as Recording Secretary. We have approximately 130 regular members and approximately 70 corresponding members, including some from Japan, Australia, Portuguese East Africa, and the West Indies.

The New York Shell Club meets on the last Sunday of September and October, and on the first Sunday from December to June at 1:30 P.M. in the

American Museum of Natural History. An identification clinic is held for about the first hour of the meeting for those with nameless shells. When the meeting is convened and the business portion has been taken care of, questions from the "Question Box" are answered by the more knowing members. Then one of the members presents a "Shell of the Month", common or rare, and talks for about five minutes on the scientific or sentimental significance of the shell.

Usually two scientific papers are presented at each meeting, with a five minute break between them so that members can stretch their legs and examine specimens, maps, or other exhibits. During the past year we had two guest speakers: Dr. and Mrs. Jerome Schweitzer showed us colored films of the reefs of Micronesia (this feature drew 200 people), and Mr. Roth of a local skin-diving club spoke to us on safety measures for underwater shelling.

Our own members also presented significant and interesting papers. Mr. Tobleman spoke on "A Comparison of British and American Shells"; Dr. Walter Jacobs told us about "The Decline of the Oyster Industry in Raritan, N. J."; Mr. D'Attilio presented a slide lecture on "Periostracum on Shells"; and Mr. George Jacobs reviewed for us "The Status of the Family Harpidae". Some of our members have gone to the far corners of the earth and reported back to us on shelling in Spain, the Florida Keys, Bermuda, Water Isle in St. Thomas, and British Columbia.

Our annual field trip was again a big success both socially and scientifically. We hired a bus and had more reservations than seats, so some members went by car to Orient Point State Park. We collected, among us, just about every species ever reported from the area, including land snails and slugs. So enthusiastic were the members that field trips were arranged during the summer, when the club has no regular meetings.

Our publication, *New York Shell Club Notes,* continues to prosper, now averaging six pages for each of the ten issues a year. We now have a new mimeograph machine, a set of addressograph plates, and an augmented editorial staff. The *Notes* contains notices of meetings, announcements of new books in the field, letters from correspondents, texts of papers presented at the meetings, and the latest one included an extra page on which was printed a letter urging Nassau County to preserve a beach area rich in wild life from commercial development; the members were urged to sign the copy and mail it in.

A number of plans are under consideration to make our twelfth year even more exciting and dynamic.

BOSTON MALACOLOGICAL CLUB, Gladys McCallum, Secretary-Treasurer.

Our club enjoyed a very successful year with a 20 percent increase in membership, part of which was due to the excellent publicity article about Drs. Clench and Turner and the club which appeared in a major Boston newspaper.

The program for the year commenced in October, 1959, with a lecture and slides by Dr. E. Michelson, who had visited Puerto Rico the previous summer to study the health problems of that country in connection with disease-bearing snails. Dr. Reiser spoke on "The Biology of the Inter-tidal Mollusca". The December meeting was devoted to a "Chinese Auction" which was for fun rather than funds and provided the members with some new shell treasurers. Dr. George Moore lectured on "Shell Collecting in Thailand", his talk illustrated with colored slides. "Man and Mollusks", a symposium held in February, highlighted the use of mollusks for food, in religion and by prehistoric man and the American Indians. Dr. William Clench and Dr. Ruth Turner presented a glimpse into some of the arduous tedious research necessary in preparing the monographs for *Johnsonia*. Dr. Henry Russell showed movies on "Mollusks and Mematocysts". An informal discussion by the members was held to share with one another collecting and cleaning methods and equipment which had been used.

May is traditionally the month for the Club's Annual Meeting, at which time the election of officers is held. The following were elected for 1960–1961: Dr. E. H. Michelson, President; Mr. Richard W. Foster, Vice-President; Mrs. Gladys McCallum, Secretary-Treasurer; Dr. M. E. Champion, Conchological Recorder; Dr. Henry D. Russell and Miss Dorothy Culligan, Executive Committee. To celebrate the Fiftieth Anniversary of our Club, a banquet was held in the Spring, at which Dr. Willard Hartman of Yale University was the guest speaker. A Golden Jubilee booklet was published to further commemorate the occasion.

In June, a field trip to the outer beach at Duxbury, Mass. was well attended by members and guests. A collection of Florida shells was given as a prize to the member collecting the greatest number of different species—the winner had 26. Again, we extend a cordial invitation to other AMU members to visit us. Our meetings are held the first Tuesday of each month, October thru May, at 8:00 P.M. at the Museum of Comparative Zoology in Cambridge, Mass.

THE PHILADELPHIA SHELL CLUB, Robert J. L. Wagner, Secretary.

The Philadelphia Shell Club continues in its fifth year to bring to the members, programs that attract both amateur and professional conchologists in the area. Membership now stands at 200.

The 1960–61 officers remain the same as for 1959–60: President, John Dyas Parker; Vice-president, Leonard Richardson; Secretary-treasurer, Robert J. L. Wagner; Historian, Virginia Orr; Editor, R. Tucker Abbott; Councillors-at-large, Ruth Ostheimer, Robert Siddall and Warner Over.

Our programs are varied, interesting and instructive. More and more club members are going on expeditions and taking active part in the club's progress. The club, with qualified instructors, started shell classes which were conducted one-half hour before each regular meeting. Wallet-size membership cards were inaugurated as a new feature during the past season.

The 1959–60 season's programs included Dr. Joseph Morrison of the U.S. National Museum who reported on his expedition to Raroia; Dr. Robert Robertson, Assistant Curator at the Academy, presented his collecting excursions into the Bahamas; the Academy expedition to New Caledonia was covered by Mr. and Mrs. George Kline; "Wes" Heilman lectured on collecting in the Margarita Islands; Dr. William Dodd reported on his collecting while on a world cruise; Virginia Orr and Ruth Ostheimer presented collecting on the Florida Keys.

With our annual Christmas party, donation auction, movies, raffles, etc., one must admit a better program would be hard to find. Nevertheless, the coming season should be as good, if not better.

GREATER ST. LOUIS SHELL CLUB, Mildred M. Novak, Recording Secretary.

The newly elected officers who took office January, 1960, for a term extending until April, 1961 are: President, Mr. Ernst Brauner; Vice-president, Mr. George Henderson; Corresponding Secretary, Mrs. Winton Barker; Recording Secretary and Treasurer, Mrs. Charles Novak; Publicity Chairman, Mrs. Charles Lewis. Meetings are held each month at the homes of members, where prepared papers are delivered, treasured old and new shells are exhibited and discussed.

One of the highlights of our season was a visit to our Club by Dr. Alan Solem, Curator of Lower Invertebrates at the Chicago Natural Museum. He spoke about his most interesting work and showed excellent colored slides and commented on his last visit to Panama.

At a meeting held at the home of Mr. George Henderson, our Vice-president, a world-wide traveler and hunter, as well as a shell enthusiast and collector, (having an extensive collection of shells) colored slides were shown of his walrus hunt in Point Barrow, Alaska. At a subsequent meeting, held at the home of Mr. and Mrs. G. Kiewitt, (having just returned from a trip to Japan), members were privileged to see beautiful colored slides of the old and new Japan—the beautiful architecture, and flower arrangements. This was all in addition to viewing their vast collection of shells.

Mrs. Charles Lewis, accompanied by her sister Estelle Windhorst, was again a delegate to the August meeting of the AMU in Montreal, in addition to also attending the Pacific Division Meeting in June at Asilomar, Pacific Grove, California. After their return (after travelling some 10,000 miles), members were invited to a meeting at their home where a full report of the two meetings were given. After hearing this glowing report of all that was learned, as well as the hospitality extended to them at both meetings, all in attendance are more anxious and enthusiastic to try and attend next year's meeting.

Although located at least 1,000 miles from the nearest seashore, much interest is displayed among our members and a few have very extensive collections. We are planning a shell auction for our December meeting and we hope to have a more interesting and active year in 1961.

NORTH CAROLINA SHELL CLUB, Hugh J. Porter, Secretary.

The North Carolina Shell Club is unique in that its 175 members come from all parts of the state. Because of this, meetings are held in differing locations throughout the state. Membership requirements state only that a person be from North Carolina, interested in the collection or study of mollusks and be approved by a majority of the membership present at a meeting.

Quarterly meetings have been varied not only in place of occurrence but in emphasis. The October 1959 meeting was a collecting trip at New Topsail Beach, N. C. Identification of the *Busycon,* Arcidae and Pinnidae groups was discussed at the business meeting by the secretary. At the December 1959 meeting held at the N. C. State Museum at Raleigh, N. C., Mr. Meacham a staff member in the museum, described their mollusk exhibits, Mrs. K. L. Johnson (club president) commented on recent collecting in Florida and Dr. B. W. Fassett showed Kodachrome slides of his extensive collection.

Though a March 1960 meeting was held in Morehead City, N. C., an unprecedented snow storm held attendance down and prevented the club from collecting on Cape Lookout. In May 1960 a meeting outside of Lumberton, N. C. on the Lumbar River was more productive. After a picnic lunch, Dr. W. H. Wheeler (Department of Geology and Geography, University of North Carolina) described the paleontological history of the area and identified many of the fossils found in the area. The October 1960 weekend at Southport, N. C. was well attended. At an evening social, Mrs. Smith Whiteside showed slides on shelling at Sanibel Island and during the regular business meeting, Dr. J. H. Ferguson (Chairman, Department of Physiology, University of North Carolina) gave a specimen-illustrated talk on the naming of shells in the Superfamily Pleurotomariacea. One of the highlights of this meeting was a boat trip by 51 members and guests to historic Baldhead Island where shell collecting was attempted. A number of interesting shell collections were displayed by club members at the various meetings.

Officers for 1960 are: President, Mrs. K. L. Johnson; Vice-president, Mr. James E. Wadsworth; Secretary-treasurer, Mr. Hugh J. Porter; members of Executive Committee, Mr. Harry T. Davis and Rev. G. Scott Turner.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Mrs. Vincent S. Vallone, Secretary.

We, the dry land sailors of the Buffalo Conchologists, have had a good year despite the fact that we have had very little first-hand experience in the collecting of live shells. Except for the few members, who in the winter visit Florida, and in the summer may get to Cape Hatteras, we have to content ourselves purely with the study of dead shells. However, there are opportunities for collecting fresh water shells, Mr. Eugene Schmeck being an authority on Niagara River mollusca and Mr. Eugene Musial Lake Erie bivalves. Mr. and Mrs. Peter Plummer have been fortunate in finding deposits of fossil shells in their travels in the Atlantic Seaboard States.

Our meager treasury does not permit our procuring outside speakers for our monthly meetings. However, we arrange for one of our group each month to deal with a particular family of marine shell (for example), and sometimes we are fortunate in securing color movies of marine mollusca through the endeavors of Miss Jean Russell, who is associated with our Buffalo Museum of Science. Our Annual Dinner Meeting in January is the high point of the year at which time we also participate in a Shell Fair and Exchange.

We have taken in several new members: one who lived as a child on Captiva Island and has first-hand information on Florida shells. Another new member is primarily a collector of antiques, but has been very lucky in acquiring huge specimen shells along with the antiques, from who knows what ancient sea captain's trunk. Another is involved in shellcraft work with children at a Methodist Home.

Mr. Eugene Schmeck attended the AMU meeting in Montreal this year. It is the desire of all of us to attend one of these meetings some day.

This enthusiastic group meets nine times a year and has the following officers: President, Eugene Musial; Vice-president, Alice Gary; Secretary, Annette S. Vallone; Treasurer, Louise Becker.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary.

At the 1959 Christmas party held at the home of Mr. and Mrs. Claude Lehman we celebrated our twentieth year. Many well-known conchologists have belonged to the Long Beach Shell Club and Mrs. Lehman mentioned them in giving a splendid report of club activities through the years.

Officers elected at the January meeting were: President, Katherine Shuman; Vice-president, Dr. Ross Hardy; Secretary-treasurer, Ralph Bormann.

Nine regular meetings were held during the year, including the annual picnic and shell auction. The annual directory of members was published, and a few copies of our publication "Shells and Shell Collecting" are still available.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, Helen DuShane, Secretary.

Our meetings are held the first Monday of each month in the new auditorium of the Los Angles County Museum. Our officers are: President, Crawford Cate, Vice-president, Gale Sphon; Treasurer, Ruth Shasky; Secretary, Helen DuShane.

Programs over the past year have been varied and interesting: "Collecting at Puertecito, Gulf of California", Dr. Ross Hardy; "Collecting in Hawaiian Waters with the Pali Expedition", Crawford Cate; "Collecting on the Mexican West Coast"—a symposium with Emery Chace, Mark Rogers and Roy Poorman; "Trawling the Gulf of California", Dr. Bruce Campbell; "It's a Hard Life"—a talk on pathological specimens by Mrs. Dorothy Brown; "Practical Ecology for the Malacologist", Dr. Rudolf Stohler; panel discussion, "My Favorite California Species", Jean Wilkins, Charlotte and Katherine Shuman; "The Dana Expedition in West Australian Waters", Cliff Weaver's slides narrated by Crawford and Jean Cate; "Expedition of the Ariel to the Gulf of California", Dr. Donald Shasky; "The California Cone", Faye Wolfson.

The club has sponsored several field trips throughout the year; some for beginners, some for advanced collectors. A scientific expedition was sponsored by the club, under the guidance of Dr. Donald Shasky. Twenty-one passengers chartered a 105 foot shrimp boat, left Guaymas, Mexico on August 28 and returned September 3 to Guaymas after crossing the Gulf of California and trawling along the coasts of the major islands. We had representation at the AMU-Pacific Division meetings in Asilomar and Elsie and Emory Chace with Faye Howard and Ruth French represented us at the National meeting in Canada.

NAPLES SHELL CLUB, Beatrice M. Cole, President.

Our club, organized in November, 1959 with 31 charter members, has in less than one year grown to a membership of 97 regular members, 3 corresponding and one honorary member. We meet the second Thursday of each month (October to May) in the Womens Club Auditorium, Naples, Florida, and visitors are always welcome. Our officers are: President, Beatrice M.

Cole; Vice-president, Dolorez Collins; Treasurer, Ellen Wilson; Secretary, Frances Gilman; Historian, Virginia Magee.

Biggest event of the year was our first annual Shell Fair. Hundreds of rare and beautiful shells from all parts of the world were displayed, and the now-famous left handed *Scaphella junonia* was declared "Shell of the Show" by the judges, Mrs. Edna Marcott and Mrs. Selma R. Lawson of the St. Petersburg Shell Club. Ribbons were awarded in nine different categories. An aquarium containing live specimens of shells from Florida waters drew considerable attention, especially the angel wing *(Barnea costata)* who found the sand covering the bottom of the tank inadequate to properly bury in.

Mr. C. W. Corwin gave an interesting talk at the December meeting on local shelling grounds and the best time to look for certain species. In January Mr. Turk Dickerson entertained with a highly informative talk concerning his own observations of growth, feeding habits and natural habitats of several species of Florida hells; a growth series of *Strombus pugilis* illustrated his talk. In February we were most fortunate in having as guest speaker Dr. A. Pilkington of St. Claire Shores, Michigan who is an underwater naturalist and expert SCUBA diver. His colored underwater movies and slides of life on the Great Barrier Reef and Grand Cayman Islands held 200 people spellbound for the entire evening.

Since the Philadelphia Shell Club was the inspiration for forming our own, we were very happy to welcome Mr. Henry Nightengale of that club as our speaker in March. He told us of shelling in Florida over the past several years, mentioning that so far as he has been able to ascertain the area around Naples is the only place where the nine pointed starfish is to be found. In April a shell auction added to our treasury.

ACTIVE MEMBERS

Membership List Revised January 1, 1961

Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.
Abbott, Mr. and Mrs. Temple, 5 Arthur's Round Table, Wynnewood, Penn.
Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Habana, Cuba.
Ahders, Catherine (See Mrs. Charles B. Schmitt)
Akers, Mrs. Frank G., 250 No. Ocean Blvd., Palm Beach, Florida.
Albert, Mrs. Ernest, Post Eng. Rycom., APO 331, c/o PM, San Francisco.
Alexander, Mrs. Robt., 8542 Lemon Ave., La Mesa, Calif.
Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.
Allen, Dr. J. Frances, 5702 Queen's Chapel Rd., W. Hyattsville, Md.
Allen, Miss Letha S., 107 W. 29th St., Baltimore 18, Md. (All shells.)
Allen, Lester E., 187 Argyle St., Yarmouth, Nova Scotia.
Allison, Edwin C., 5262 Rincon St., San Diego 15, Calif. (Fossil, Recent and mega-micro marine invertebrates.)
American Assn. Advancement Science, 1515 Massachusetts Ave., Washington 5, D. C.
Ames, Margaret Dale, 17 East 89th St., New York City.
Ancona, Prof. Ignacio, Instituto de Biologica Casa del Lago del Chapultepec, Mexico D. F.
Anderson, Miss Katherine M., Box 206, Chillicothe, Ohio. (Pecten, Murex.)
Arias, Sergio, M.D., Sociedad de Ciencias Naturales, Apartado 681, Caracas, Venezuela. (Land, f.w. mollusks of the neotropical region.)
Armstrong, Mrs. Eliot, 14 Meadow View Place, Buffalo 14, N. Y.
Arnold, Dr. Ralph, 324 W. Arrellega St., Santa Barbara, Calif.
Ashbery, Mrs. Wallace H., 12 E. Depew Ave., Buffalo 14, N. Y.
Athearn, Herbert D., R.F.D. No. 5, Cleveland, Tenn. (Fresh water mollusks.)
Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. (Land shells.)
Atkinson, Mrs. Edw. W., 270 Orchard Lane, Columbus 14, Ohio. (Atlantic coast marines; freshwater.)
Atmus, Rudolph E., 239 Pease Rd., E. Longmeadow, Mass. (Land snails, esp. *Polymita* and *Liguus*.)
Atwater, Rev. David T., 50 Grace Court, Brooklyn 2, N. Y.
Awald, Clifford J., 162 Southwood Dr., Kenmore, N. Y.
Ayers, Donald F., Box 122, West Bloomfield, N. Y.

Baily, Dr. and Mrs. Joshua L., Jr., 4435 Ampudia St., San Diego 3, Cal.
Baker, E. P., 11619 Downey Ave., Downey, Calif. (Exch. Pacific Coast shells.)
Baker, Emmett B., 7 Riverview Ave., Kingston, Mass. (General interest.)
Baker, Dr. and Mrs. Horace B., Zoological Lab., Univ. of Penn., 38th St. and Woodland Ave., Philadelphia, Pa. Res. 11 Chelten Rd., Havertown, Pa.
Baker, Nelson W., 279 Sherwood Dr., Santa Barbara, Calif. (General interest.)
Balch, Prof. Francis N., 130 Prince St., Jamaica Plain, Mass.
Barbosa, Frederico Simoes, Caixa Postal 459, Recife, Pernambuco, Brazil. (Freshwater snails.)
Basch, Dr. Paul F., Dept. Biology, Kansas State Teachers College, Emporia, Kansas. (f.w. pulmonates.)
Bates, Miss Esther S., 161 So. Atlantic Ave., Daytona Beach, Fla. (Exchange.)
Bayer, Frederick M., Div. of Marine Invert., U. S. Nat'l Museum, Washington 25, D. C.
Beardsley, Gail, 32 Culloden Road, Stanford, Conn.
Beaven, Dr. and Mrs. J. Mahlon, 175 W. Ridgewood Ave., Ridgewood, New Jersey. (Amateurs; beautiful shells.)
Becker, Mr. and Mrs. Albert F., 2157 Sunrise Dr., La Crosse, Wisc. (Mississippi River shells.)

Becker, Miss Louise W., 2 Lexington Ave., Buffalo 22, N. Y.
Bedell, Mrs. Adele Koto, 1421 Roosevelt Ave., Beloit, Wisc.
Bedford, Chas. A., R.R. 1 Gower Point, British Columbia, Canada. (Marine life in general.)
Beetle, Mrs. Dorothy E., 609 Russell St., Laramie, Wyo. (world land, f.w. shells.)
Bell, Miss Vashti, 528 South Erie, Wichita 16, Kansas.
Bengston, Mrs. Geo., Rt. 4, Independence, Iowa. (Land, f.w. and fossils.)
Bequaert, Dr. Joseph C., Biology Dept., Univ. of Houston, Houston, Texas.
Berg, Dr. Clifford O., New York College of Agriculture, Cornell Univ., Ithaca, N. Y. (Flies which kill snails.)
Berg, Mrs. Frederick C., Georgetown, Md. (Shells of the Fla. Keys.)
Bergeron, Eugene, P.O. Box 1236, Balboa, Canal Zone. (Biological Survey of Panamic Range—fauna mollusca.)
Berry, Dr. and Mrs. Elmer G., National Institutes of Health, Bethesda 14, Md.
Berry, Dr. S. Stillman, 1145 W. Highland Ave., Redlands, Cal.
Bickford, Glen, Box 862, Morro Bay, Calif. (W. American marine and world Haliotidae.)
Bippus, Alvin C., 2743 Sagamore Rd., Toledo 6, Ohio. (Marine univalves.)
Bixby, Mrs. H. M., Look See, Captiva, Florida. Summer: Bolton Landing, New York.
Blaine, Mr. and Mrs. Alger P., 74 Palmer Ave., Springfield, Mass. Winter: 1805 20th Ave., St. Petersburg, Fla.
Bloom, Robt. J., 201 Brentwood Dr., Syracuse 9, N. Y.
Boca Grande Hotel, Boca Grande, Florida.
Bodden, Mrs. John M., 15978 E. Cleveland 12, Ohio. (Tropical f.w. snails.)
Bormann, Mrs. Mary, 4331 Vermont St., Long Beach 14, Cal.
Boston Malacological Club, c/o Gladys McCallum, Concord Rd., Westford, Mass.
Bradley, J. Chester, 604 Highland Rd., Ithaca, N. Y.
Bradfield, Mrs. Jesse, Mt. Alto, Rome, Ga. (General collecting.)
Brakefield, Gertrude E., 3830 7th St., N., St. Petersburg, Fla. Summer: Water Wonderland, Indian River, Mich.
Bradley, John C., 469 Farmington Ave., Waterbury 10, Conn. (Travel and collect.)
Branson, Branley A., Dept. of Biology, Kansas State College of Pittsburg, Pittsburg, Kansas. (S. W. gastropods & fishes.)
Briell, Richard Allen, Rt. 1, Box 141, Lexington Park, Md. (*Conus, Murex, Spondylus.*)
Broadus, Jas. M., III, 3806 Old Shell Road, Mobile, Ala. (Gulf of Mexico species.)
Bronner, Dr. and Mrs. Carl E. Cahn, 5417 S. Blackstone Ave., Chicago 15, Ill.
Brown, A. Thomas, Surf City, N. C.
Brown, Dorothy, 1451 N. Ogden Dr., Los Angeles 46, Calif. (Pectenidae.)
Brown, Walter, 218 Allison Ave., Park Ridge, Ill.
Brown, Mrs. Ward, 1420 N. Lakeside Dr., Lake Worth, Florida.
Brunson, Dr. Royal Bruce, Montana State Univ., Missoula, Mont.
Bryan, Edwin H., Jr., Bishop Museum, Honolulu 17, Hawaii. (Pacific biogeography and bibliography.)
Buerk, Minerva S., M.D., Bryn Mawr Med. Bldg., Bryn Mawr, Penn.
Burch, Dr. John Bayard, Museum of Zool., U. of Mich., Ann Arbor, Mich. (Land and f.w. mollusks.)
Burch, Mr. and Mrs. John Q., 4206 Halldale Ave., Los Angeles 62, Calif.
Burton, Helen A., 391 Adams St., Oakland 10, Calif.
Butler, R. B., 171 Main St., Matawan, N. J. (Marines, Recent and fossil.)

Cahoon, Ruth Mary, 1108 Fairfield St., Scranton, Penn.
Carlisle, Mrs. E. G., Shelburne Museum, Inc., Shelburne, Vt.
Carlisle, Mrs. Mary, Swedesboro, N. J.
Carpenter, Mjr. Walter N., 7115 Healy Dr., Springfield 14, Va. (Exchange, buy, sell.)

Carriker, Dr. Melbourne R., Dept. of Zool., U. of N. C., Chapel Hill, N. Carolina. (Morphology of drilling mechanism in gastropods; ecology.)

Cartwright, Mrs. Jas. B., 4533 Park Ave., Memphis 17, Tenn. (Atlantic and Gulf Coast shells.)

Castellanos, Dr. Jose R., Cia Editorial "El Mundo" S.A., Virtudes No. 257, Habana, Cuba.

Cate, Mr. and Mrs. Crawford N., 12719 San Vicente Ave., Los Angeles 49, Calif. (Cypraea; Hawaiian mollusca.)

Chace, Mr. and Mrs. Emery P., 3446 Van Dyke Ave., San Diego 5, Calif.

Chamberlin, Dr. Lockwood J., 509 Franklin St., Alexandria, Va.

Champion, Dr. Merrill E., Museum of Comp. Zool., Cambridge 38, Mass.

Chandler, Mrs. Doris M., P.O. Box 621, Chatham, Mass. Winter: P.O. Box 2344, Ft. Myers Beach, Fla.

Cheever, Dr. Austin W., 464 Beacon St., Boston 15, Mass.

Chestnut, Dr. A. F., Inst. of Fisheries Research, Morehead City, N. C. (Ecology of economic mollusks, taxonomy of pelecypods.)

Christensen, Carl, 1311 Wawe Pl., Honolulu 18, Hawaii. (*Conus, Cypraea, Voluta.*)

Claar, Elmer A., Northfield, Ill. (*Cypraea.*)

Clarke, Dr. Arthur H., Jr., Dept. of Mollusks, National Museum of Canada, Ottawa, Canada.

Clarke, Dr. Rosemary, Music Dept., Univ. of Dubuque, Dubuque, Iowa. (*Liguus.*)

Clench, Dr. William J., Museum of Comp. Zool., Cambridge 38, Mass. (Collect, exchange, buy.)

Coastal Bend Shell Club, c/o Sec'ty Magaw, 634 Pennington, Corpus Christi, Texas.

Coats, Miss Ruth E., 1828½ S. Hill St., Oceanside, Calif.

Cohen, Marjorie, "The Barbizon," Lexington at 63rd, New York City 21.

Cole, Mrs. Beatrice M., P.O. Box 1003, Naples, Fla. (Worldwide; exch.)

Collins, Henry H., Jr., 1200 Post Road, Scarsdale, N. Y.

Collins, Mrs. Dolorez, 346 Central Ave., Naples, Fla. (Worldwide; exch.)

Compitello, Mrs. Juliette, 399 St. John's Place, Brooklyn 38, N. Y.

Conchological Club of Southern California, c/o Helen Du Shane, 3552 Hollyslope Rd., Altadena, Calif.

Conchological Section, Buffalo Society Natural Sciences, c/o Mrs. Vincent Vallone, 170 Hillcrest Dr., Clarence, N. Y.

Condé, Vincente, Redpath Museum, McGill Univ., Montreal, Canada.

Conkling, Joseph E., Box 264, Edgartown, Mass. Winter, 628 4th Ave., S., St. Petersburg, Fla. (Collect, buy, exchange.)

Connecticut Shell Club, Peabody Museum, New Haven, Conn.

Connecticut Valley Shell Club, Springfield Museum Nat. History, 236 State St., Springfield, Mass.

Corbett, Wm. Phelps, 2939 Nelson St., Ft. Myers, Fla (Exch. rare *Cypraea, Olivia, Murex.*)

Cornell University Library, Ithaca, N.Y.

Corwin, Warren, Royal Palm Hammock, P.O. Goodland, Fla. (Buy and sell shells.)

Cowles, Edward F., Jr., 12 Hillcrest Ave., New Rochelle, N. Y. (Tropical marine shells; photography.)

Craine, Mrs. Ruth A., 155 N. Broad St., Norwich, N. Y.

Cramer, Frances L., Life Science Dept., E. Los Angeles College, 5357 Brooklyn Ave., Los Angeles 22, Calif. (Ecology; conservation.)

Crant, Harold, The Shell Factory, P.O. Box 1231, Ft. Myers, Fla.

Crum, Mrs. Dan, 930 N.E. 23rd St., Crest Haven, Pompano Beach, Florida. (*Conus; Voluta.*)

Cull, Mrs. R. R., 7927 Chippewa Rd., Brecksville, Ohio.

D'Amico, Joseph S., 9927 Drury Lane, Westchester, Ill.

Danforth, Miss Louise L., Box 415, Vineyard Haven, Mass. (New Eng. shells.)

Danik, Miss Gene B., 923 Lakeside Dr., Rahway, N. J. (Pacific, E. Indian and Australian gastropods.)

Danzer, Jerry, Concordia Teacher's College, Box 119, River Forest, Ill.
Darling, F. Murray, 3313 Achusnet Ave., New Bedford, Mass. (Marine life.)
D'Attilio, Anthony, 44 Lynwood Dr., Valley Stream, Long Is., N. Y.
Davis, Harry T., Director, North Car. State Museum, Raleigh, N. C.
Dawley, Dr. Charlotte, The Women's College, University of N. C., Greensboro, N. C.
Dazo, Boniface & Leticia, 1433 University Terrace, Apt. 726, Ann Arbor, Mich. (Land, f.w. mollusks of U. S. & Philippines.)
DeLuca, Miss Gladys and Mrs. John A., 16 Oakland Ave., Wollaston 70, Mass.
Derr, Mr. and Mrs. John S., Jr., Dearbought, Rt. 1, Frederick, Md.
Desmond, Hon. Thos., 94 Broadway, Newburgh, N. Y.
DeStefano, Dr. and Mrs. Fredrick, 55 W. Elizabeth, Brownsville, Texas. (Gulf of Mexico shells.)
DeWitt, Robt. M., Biol. Dept., Univ. of Fla., Gainsville, Fla.
Dexter, Dr. Ralph W., Dept. of Biology, Kent State Univ., P. O. Box 507, Kent, Ohio.
Di Domenico, Helen E., P.S. 154, 162 St. 75 Ave., Flushing, L. I., N. Y.
Dietrich, Mr. and Mrs. Louis E., 301 Veri Ave., Pittsburgh 20, Pa. (Mollusks of the West Indies.)
Dodd, William E., M.D., Ocean St. & Bay Ave, Beaech Haven, N. J.
Dodge, Henry, 6 Rochambeau Rd., Scarsdale, N. Y.
Donahue, Mrs. Enid P., La Hacienda, Sanibel, Fla. "See L. F. Cockerill's shells!"
Donahugh, Mrs. Jas. F. P., 38 Daris St., Beacon, N. Y.
Donnelly, John F. and Katherine, 131 E. 26th St., Holland, Mich.
Donovan, James W., 3718 Calvin Ave., West Palm Beach, Fla.
Dove, Mrs. Paul, 512 S. Main St., Geneva, N. Y. (Fla. west coast shells.)
Drake, Robt. J., Dept. of Zool., Univ. of British Columbia, Vancouver 8, B. C., Canada.
Dreibelbis, Edwin H., 311 N. Brown St., Titusville, Pa. (Worldwide shells, starfish.)
Duarte, Eliseo, Casilla Correo 1401, Central, Montevideo, Uruguay. (Exch. shells and information.)
Dundee, Dr. Dolores S., Div. of Science, Dept. Biology, LSU in New Orleans, New Orleans 22, La. (Land mollusks, f.w. mussels.)
Dunn, Mr. and Mrs. Geo. E., 4727 Twenty-seventh Ave. South, St. Petersburg 11, Fla.
Dunn, V. Roger, 5021 18th Ave., S., Gulfport, Fla. (*Conus.*)
Dvorak, Stanley J., 3856 W. 26th St., Chicago 23, Ill. (Rare west Atlantic Muricidae.)

Eaton, Miss Ruth E., 3333 Orange St., Riverside, Cal.
Echardt, Mary Jean, 35 Prospect Park West, Brooklyn 15, N. Y.
Eddy, Anne Elizabeth, 41 Donald St., Bloomfield, N. J. (novice!)
Edmiston, Mrs. J. R., 50 Popham Rd., Scarsdale, N. Y.
Eggleston, Dr. Harla Ray, Chairman, Dept. of Biol., Marietta College, Marietta, Ohio.
Elford, Mrs. E. M., Rt. 2, Box 349, Gig Harbor, Wash. (exchange.)
Emerson, Dr. Wm. K., Am. Museum of Nat. Hist., Central Park W. at 179 St., New York 24, N. Y.
Emery, Adele K., Box 1265, South Miami, Florida. (Fla. E. coast marines.)
Erickson, Carl W., 4 Windsor Ave., Auburn, Mass.
Eubanks, Mrs. Edwin W., 5108 Spring Glen Rd., Jacksonville 7, Fla. (Florida marine shells.)
Eyerdam, Walter J., 7531 19th Ave. N.E., Seattle 5, Wash.

Falconer, Bessie, 24634 Lawton Ave., Loma Linda, Calif.
Field, Clyde L., 2534 "K" Ave., National City, Calif.
Finke, Mrs. Bertha, 347 40th St., Sacramento, Calif.
Finlay, C. John, Varadero Beach, Cuba. (West Indian marine shells.)
Finley, Mrs. Ruth C., 4517 B St., Sacramento, Cal. (*Conus;* exchange.)
Fisher, Mrs. Chas. K., 1239 Fern St., New Orleans, La.
Fisler, John K., 1870 Basswood, Carlsbad, Calif. (General interest.)
Fitch, John E., Calif. State Fish. Lab., Terminal Island, San Pedro, Cal.

Fleer, Mrs. Paul C., 1902 Linden Ave., Highland Park, Ill.
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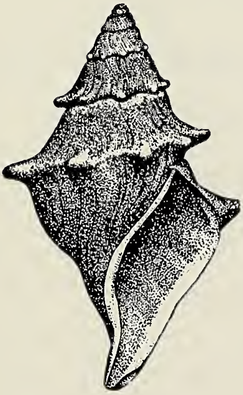

A.M.U., Twenty-eighth Annual Meeting
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THE AMERICAN MALACOLOGICAL UNION TWENTY-EIGHTH ANNUAL MEETING

June 19 - 23, 1961

"Washington in June is delightful!" had promised the preliminary announcement of plans for the 1961 annual meeting of the American Malacological Union. And indeed it was. Lush foliage of the 2,000 varieties of trees and shrubbery (guidebook lore) and the velvet lawns of the Mall as yet untouched by summer dust and drouth enhanced the awesome beauty of monuments and government buildings, and air conditioning now relieves the discomfort of earlier years.

Members began to arrive at the headquarters, Raleigh Hotel, on the eve of opening day, their numbers swelled many-fold on the following morning as a steady stream of guests registered at tables set up on the first floor of the Natural History Building of the U. S. National Museum. There volunteer members of the National Capital Shell Club, co-hosts together with the Greater Baltimore Shell Club and the Museum's Division of Mollusks, passed out badges and programs and made arrangements for banquet and field trip. Dr. Harald Rehder and his henchmen Morrison and Rosewater, veterans all of former meetings, performed the countless other services which keep an event such as this running smoothly.

Once registered, delegates whiled away the remainder of the forenoon in inspecting the several fine shell exhibits arranged by members of the local shell club and by the Museum, in touring adjoining areas of the huge building and of course in greeting old friends and new.

At one o'clock President Thomas E. Pulley produced a brand new gavel (his own gift to the AMU which filled a thirty year need) and banging it lustily called the 1961 meeting to order.

He introduced Dr. Leonard Carmichael, Secretary of the Smithsonian Institution who warmly welcomed his audience to Washington and to the Museum, observing that the beginnings of the great shell collection housed therein might well be called pre-Smithson since the nucleus of it existed even before the generous Englishman made his endowment to found the institution which bears his name and which he never saw. (Indeed, James Smithson never visited America.)

Dr. Carmichael invited his guests to inspect other parts of the Natural History Museum, citing as of particular interest the recently reopened Hall of Invertebrate Paleontology which ties in closely with the shells.

In replying to Dr. Carmichael, President Pulley voiced his own gratitude and that of his colleagues for the hospitality being shown on this occasion, as well as for the continuing services of the U. S. National Museum and its Department of Mollusks to the science of malacology. He too urged his listeners to "look beyond the shells."

He read a letter from Robert W. Talmadge, Vice-chairman of the Pacific Division. It bore the greetings of that body to the parent organization, then announced with deep regret the death of the Chairman, Dr. Howard M. Hill, which had occurred on May 23rd. President Pulley observed that the AMU shares the loss of Dr. Hill since he was a charter member and a personal friend of many of the members.

Then announcing that because of a full schedule and in fairness to all with papers to present, a strict time limit would be observed, he introduced the first speaker:

JOHN WESLEY POWELL – PIONEER ILLINOIS MALACOLOGIST.

Ernest J. Roscoe, Chicago Natural History Museum.

(Abstract)

The accomplishments of John Wesley Powell as an explorer, geologist, ethnologist, and administrator, tend to overshadow his abilities in other fields. The Powell family settled in northern Illinois in the early 1850's. With an impressive private museum and a considerable reputation as a naturalist to his credit, Wes, still in his teens, turned his attention to mollusks. Over a period of years he collected specimens from the Mississippi River between its mouth and St. Paul, from most of the major tributaries in Illinois, Iowa, Missouri, and Indiana, from the Great Lakes, and from the smaller lakes in Wisconsin. In each area he sought representative collections rather than rarities. His collection, exhibited at the state Agricultural Fair in 1860, won a premium of $25 for the "best collection illustrating the zoology of Illinois."

In 1858 Powell was elected the first secretary of the Illinois State Natural History Society and also its unpaid Curator of Conchology, being the first person to hold such a title in the state. Subsequently he was able to obtain both salary and maintenance appropriations from the legislature. Powell retained the position of Curator until his resignation in 1872. An inventory of the Natural History Society Museum in 1870 showed that it contained upwards of 15,000 shells and a like number of fossils, most of which had probably been collected by Powell himself.

The fate of the Powell material is disheartening. Circumstances, including accidental removal of original numbers and fire, have conspired to make it impossible now to identify with certainty Powell material in the Illinois institutions known or presumed to have been a repository for his collections. This is doubly regrettable since he published nothing on the results of his collecting, and since it was done before pollution and silting profoundly affected the streams of the mid-west.

Despite the lack of tangible record of his work, John Wesley Powell should be regarded as one of the pioneer naturalists of Illinois, and one of the first to investigate its molluscan fauna.

TYPE SPECIMENS OF MARINE MOLLUSCA DESCRIBED BY P. P. CARPENTER FROM THE WEST COAST, SOUTH OF SAN DIEGO.

Katherine V. W. Palmer, Paleontological Research Institution, Ithaca, New York.

(Abstract)

The project is underway to bring together descriptions, notes, and illustrations of the types of the species described by Philip P. Carpenter from Lower

California, Cape San Lucas, Panama, and Acapulco. This involves the second part of the illustration of West Coast molluscan types of Carpenter. About 102 species are included, consisting of about 28 pelecypods, 65 gastropods, and 9 chitons. The larger number of type specimens are in the United States National Museum, some in the Redpath Museum, and some may be in the British Museum (Natural History). The paper will be published as a Bulletin of American Paleontology which contains other papers on West Coast Mollusca. The work described will not contain the illustrations of the new species described by Carpenter (1857) in "The Catalogue of the Collection of Mazatlan Shells in the British Museum: collected by Frederich Reigen." That book contains about 692 Species with about 222 described therein as new by Carpenter. The project of their illustration will make a third and separate book on Carpenter types.

At this point a fifteen minute break allowed late arrivals to register before the relentless gavel called the audience back to its seats.

LAND SNAILS OF THE DELMARVA PENINSULA. Frank Wayne Grimm, Michigan State University.

(Abstract)

The Delmarva Peninsula, which lies between the Atlantic Ocean and Chesapeake Bay, is the largest peninsula of the Atlantic Coastal Plain north of Florida. Florally, most of the southern two-thirds of this peninsula forms a transition zone between the open loblolly pine woods of the southern Atlantic Coastal Plain and the upland oak woods of the Piedmont. The northern third is occupied by upland oak woods and Virginia pine. Streamside vegetation of this northern third includes hemlock and sycamore; that of the southern third is dominated by bald cypress.

Apparently, colonization of Delmarva by land snails has been accomplished through three separate sources of introduction: Pleistocene and post-Pleistocene migration southward from the Piedmont, rafting across the Chesapeake Bay, and human introduction. To determine the extent of the influence of these sources of introduction upon the composition of the fauna, the ranges of the species known to inhabit the peninsula were compared. The northern third of the peninsula was found to be richest in species. Its fauna differs little in composition from the adjacent Piedmont. The number of native species decreases southward until peninsular Virginia is reached. Here two Piedmont species (*Triodopsis juxtidens* and *Retinella burringtoni*) reappear after being absent from the fauna for nearly 150 miles, and the pine woods fauna is enriched by the appearance of *Ventridens cerinoideus* and *Triodopsis fallax obsoleta*—species characteristic of mainland coastal Virginia and the Carolinas. Probably these forms have colonized this region by being rafted across the Chesapeake from the southwest.

Unfortunately, owing to the extensive conversion of the land from forest to weedlot and farm, it is quite difficult to determine the influence of human introduction upon the faunal composition, except in the most obvious cases. Any record from a cultivated area or even a roadside is suspect.

Extensive colonies of hybrids between *Triodopsis f. fallax* and *T. f. obsoleta* are common from the Pocomoke River region of Maryland, southward through peninsular Virginia to Cape Charles. These colonies are surprisingly uniform in coloration and apertural dentition. If they exhibit a

cline, it is a rapidly "stepped" one. Typical *T. f. fallax* occupies most of the peninsula north and east of Salisbury, Maryland. Only in scattered places near the southern end of its range does it vary in the direction of *obsoleta*. Colonies of specimens resembling "typical" *obsoleta* are rarely encountered. In the laboratory, individuals from one such colony (introduced in Anne Arundel Co., Md.) cross-bred readily with "typical" *fallax* to give hybrids identical with the Delmarva form and closely resembling *T. hopetonensis*. The hybrids have bred true to the F_2 generation. These hybrids have been variously reported from the Delmarva as *T. hopetonensis*, *T. chincoteaguensis*, and *T. messana*.

AN ANALYSIS OF THE DISTRIBUTION OF THE LAND PULMONATES. Joseph Vagvolgyi and Kenneth Boss, Museum of Comparative Zöology, Cambridge, Massachusetts.

INTRODUCED MOLLUSKS OF THE GULF COAST. Dee Dundee, Louisiana State University, New Orleans.

(This paper illustrated with a map, distribution charts and Kodachrome slides of locality sites, eggs, etc.)

SOME OBSERVATIONS ON THE GROWTH AND SURVIVAL OF ORGANISMS ON THE SHELL OF *PLACOPECTEN MAGELLANICUS*. Arthur S. Merrill, U. S. Fish and Wildlife Service, Woods Hole, Massachusetts.

(Abstract)

The post-larval commensal species which grow and flourish on the upper valve of the sea scallop, *Placopecten magellanicus*, include representatives of most marine phyla. Most commonly noticed are the boring sponges, sea anemones, branching and encrusting bryozoans, pelecypods, barnacles, tube worms, and simple and colonial ascidians. The species found on the shells are those which are found on any suitable substrate in the vicinity.

A single species may settle in large numbers on a scallop, but more often a mixed group of organisms settle. As the community on the host grows and thrives, other organisms may join it, usually simply to browse thereon or to take shelter in available crevices. Thus, the attached life may form a veritable "garden" on many sea scallops. The fact that the "garden" is simply a fouling community is often apparent when a fast growing dominant is found to have overgrown, crowded, or smothered less fortunate members.

Some commensals may divide or bud asexually (sponges and actiniarians) but usually the increase in bulk and weight is through increase in size and weight of the individuals which first settled. Young sea scallops are quite active and usually collect little growth on their shells, but adults become more or less sedentary and may be heavily fouled. The heavily fouled individuals carry their burden without apparent harm. They are, of course, not hindered in the same respect as crawling gastropods which search actively for their food. Perhaps the greatest burden a sea scallop might be forced to bear is the sponge, *Cliona celata*, which, besides boring into the host's

shell, often forms large, irregular masses 8 to 10 inches high over the surface of the shell.

(Kodachrome slides accompanied this paper.)

This paper concluded the afternoon session of opening day, but the best was still to come. The program which announced a garden party at the home of Mr. and Mrs. A. Lothrop Luttrell gave no hint of the gracious hospitality which awaited the group (now swelled to nearly the complete attendance of 150) transported in two packed buses to Rockville, Maryland, some 15 miles from downtown Washington. Greeted at the entrance of their beautiful garden by the host and hostess, guests were invited to partake of liquid refreshment and an endless variety of hors d'oeuvres, then to seek the still welcome shade to relax in comfortable chairs and discuss the endless topics which always engross malacologists.

Twilight finally signaled the return to the city, and the first day of the twenty-eighth annual meeting was history.

Summer came on the following day and brought along an all-day rainstorm which drenched the hardy souls who ventured on foot to make the four block trek between hotel and museum. However, there are cabs a-plenty in Washington and the first speaker addressed a near capacity audience.

SOME NOTES ON THE LARGE FRESHWATER SNAIL *TULOTOMA MAGNIFICA* CONRAD.

Herbert Athearn, Cleveland, Tennessee.

(Abstract)

This species is endemic to the Alabama River system. Dr. Wm. J. Clench reports that the Harvard University collection contains records of *Tulotoma magnifica* from the Alabama River near Claiborne, Alabama; from several shoals of the Coosa above Wetumpka and from the Coosa at Wetumpka. Many ecological changes in this river system, such as the submergence of those particular Coosa shoals, during the past 70 years had made the living status of *Tulotoma magnifica* questionable. This report records recent records.

In 1953, the species was found living in Choccolocco Creek south of Lincoln, Alabama. Two years later it was found to be fairly abundant in Big Canoe Creek in St. Clair County, Alabama. In these two creeks I found that the species has nocturnal habits.

On May 9th, 1959 at daybreak, I found *Tulotoma magnifica* crawling in shallows pools in the Coosa gorge at Wetumpka. As the light of day became brighter, these specimens crawled into crevices beneath ledge rock that surround the pools. Collecting may be accomplished here only when the gates of Jordan Dam, six miles above here, are closed. A tremendous torrent of water flows through this gorge at other times.

In summary, *Tulotoma magnifica* appears to be the sole gastropod in the Coosa at Wetumpka today. It is also the most common mollusk. At least four species of naiads are found here, only two of which, *Elliptio crassidens incrassatus* Lea and *Leptodea laevissima* Lea, are at all common.

(Specimens of the mollusk under discussion were passed around for inspection.)

SOME STUDIES ON THE GENUS *IO*.[1] Boniface C. Dazo, University of Michigan.

(Abstract)

No other group of fresh-water snails in North America are as unique and perhaps as attractive as those of the genus *Io*. This small genus of relatively large aquatic snails belonging to the family Pleuroceridae has a very limited geographical range and is confined only to the headwaters of the Tennessee River and its tributaries above Chattanooga. These once common snails are now becoming extinct.

Studies on *Io* are meager. In our present investigation we intend to supplement known data with biological and morphological studies of the snail.

On two collecting trips during 1960, live *Io* were collected from the Clinch River near Tazewell, Tennessee. In the laboratory 18 snails are still alive out of 26 live specimens collected November, 1960. Some egg-laying has occurred in the laboratory. On April 28, 1961, a female *Io* laid 179 eggs in six separate masses or clutches. Two additional snails laid eggs on May 24, 1961, one of which had 85 eggs in two masses and the other 282 eggs divided into six egg clutches. On the average each female laid 4.66 clutches or 182 eggs. The number of eggs in a mass ranged from 16–100 with an average of 39 eggs per clutch. The egg mass is ribbon-like, gelatinous, transparent or colorless, and devoid of any sand grain covering. Its average measurements are 9.27 mm. by 2.70 mm. Individual eggs were whitish to grayish-white and measure about 0.35 mm. in diameter. These eggs were arranged in a diagonal pattern with respect to the length of the mass in rows of 1–5 eggs. Young began to hatch after 15 days.

(Mr. Dazo called attention to the fact that it is *Io fluvialis* Say which appears on the cover of the annual AMU bulletin. His paper was illustrated by a series of Kodachrome slides depicting the 8 species and 5 varieties of the genus in natural habitat and in varying stages of development.)

EXPERIMENTS ON THE VELOCITY OF MARINE GASTROPODS. H. E. Coomans, American Museum of Natural History, New York City.

(Abstract)

Experiments in molluscan locomotion were made at the Caribbean Marine Biological Institute at Curaçao. The mollusks were placed in a tank with a runway of two feet made of glass plates, the width of the runway could be adapted to the size of the shell. The speed was measured with a watch. The temperature of the seawater in the tank was kept constant (27.2–28.4 °C.) during the experiments. About 200 animals belonging to 25 species were used.

The snails showed different ways of locomotion:

1) shockwise movements, i.e., moving short distances with a period of rest between two shocks (*Strombus costatus*, *Vasum capitellum*);

2) crawling around in small circles (*Columbella mercatoria*);

3) crawling in a straight line and with regular speed:

a) constantly moving species (*Tegula excavata*, *Nitidella ocellata*);

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[1] This investigation was supported (in part) by a research grant, 2E-41, from the National Institute of Allergy and Infectious Diseases, U. S. Public Health Service.

b) species that crawl often, but not constantly (*Thais rustica*, *Planaxis nucleus*);

c) less constantly crawling species, crawling very slowly (*Conus regius*);

4) refuse to move in the runway (*Mitra nodulosa*, *Strombus gigas* juv.).

The mentioned speed-data are those of the fastest observations, not the average of each species; the pace is converted to feet per hour.

In 4 species it was practically impossible to count the speed, as they moved little or not at all.

In 4 species the speed was less than 10 feet/hour;
in 7 species the speed was between 10 and 20 feet/hour;
in 5 species the speed was between 20 and 30 feet/hour;
in 2 species the speed was between 30 and 40 feet/hour;
in 1 species the speed was between 40 and 50 feet/hour;
in 2 species the speed was between 50 and 60 feet/hour.

From these data will be seen that most animals reached a speed between 10 and 30 feet per hour, only a few are slower than 10 or faster than 30 feet per hour. The highest velocity of the 25 species was measured with two species (*Thais rustica* and *Cantharus auritula*), both 59 feet/hour.

The average speed of the 21 moving species is 24.7 feet/hour.

The experiments proved that very small species and shock-movers are rather slow. The continuously moving species covered a long distance in an hour.

For most genera or families the rule applies: the larger the species, the faster the speed, for instance in the Neritidae:

	length in mm	*speed in feet/hour*
Puperita pupa	8	11.8
Neritina virginea	12	15.5
Nerita tessellata	15	17.9
Nerita versicolor	21	23.6
Nerita peloronta	30	22.7

(A blackboard drawing illustrated the unique racecourse designed by Dr. Coomans to time his mollusks.)

LIVING MOLLUSKS. Virginia Orr, Academy of Natural Sciences, Philadelphia.

Miss Orr presented her series of Kodachrome slides to a packed house, for she is well-known for her magnificent photography. This time her pictures were of living mollusks of New Caledonia, Australia and New Zealand. Although most were photographed in laboratory tanks, seeing the strange and beautiful animals occupying familiar shells was a revelation.

WENTLETRAPS (EPITONIIDAE) FEEDING ON COELENTERATES.

Robert Robertson, Academy of Natural Science, Philadelphia.

(Abstract)

Epitonium (Epitonium) albidum (Orb.) lives in association with, and feeds on, the large sea anemone *Stoichactis helianthus* (Ellis) in the Bahama Islands. On the New Jersey coast, I have offered (experimentally) two other,

smaller anemones to another *Epitonium, E. (Gyroscala) rupicola* (Kurtz). It fed on *Paranthus rapiformis* (Lesueur) and on *Haliplanella luciae* (Verrill).

***E. rupicola* is usually a forager and not, like *E. albidum*, a symbiont. The natural prey of *E. rupicola* is probably *Paranthus rapiformis*, a sand-dweller. *Haliplanella luciae* is an introduced species that has been present on the New Jersey coast no longer than about sixty years.**

These observations bring to seven the total number of wentletraps (Epitoniidae, "Scalidae," or "Scalariidae") known to feed on, or to occur with, sea anemones and corals. Possibly, all wentletraps feed primarily on anemones or on other benthic coelenterates; some are symbionts with large anemones, others (perhaps most) forage. Little information is available about the specificity with which wentletraps associate with, and feed on, anemones. Anemones can be abundant where wentletraps are absent and, conversely, many kinds of wentletraps have been found where there are (or appear to be) no coelenterates.

All the species in the family Janthinidae, closely allied to the Epitoniidae, feed on coelenterates. All the Janthinidae are pelagic and float at the surface of the sea. They feed on floating siphonophores and on certain pelagic anemones. The similarity in choice of prey in both families correlates with other functional and anatomical similarities.

[A paper on this subject will be published in the Proc. Malac. Soc., London.]

(This paper accompanied by a series of color slides. Dr. Robertson asks everyone who may in the future observe these mollusks living in conjunction with coral, anemones, etc., to take careful notes on all phases of the association.)

Noontime break at this point. Still raining. No group photograph. Sessions resumed at 1:30:

MOLLUSCAN RESEARCH IN THE BUREAU OF COMMERCIAL FISHERIES. John B. Glude, U. S. Fish and Wildlife Service, Alexandria, Virginia.

(Abstract)

Biological, ecological, and physiological research on mollusks is conducted at five Federal laboratories on the Atlantic Coast and one in the Gulf of Mexico. The objective of this research is to provide a fund of knowledge which can be used by the industry to manage populations of shellfish, and to protect them from predators or diseases.

Major research programs include:

(1) Halting the decline in soft-shell clams in New England which was caused by depredations of the green crab *Carcinides maenas*, super-abundant during a cycle of warm winters. Two control methods, one a physical barrier and the other the judicious use of a pesticide incorporated in a bait, were developed and recommended to States and to the industry.

(2) Control of predatory oyster drills *Urosalpinx* and *Eupleura*. Government scientists found that copper ions repelled these drills and designed a low fence including a strip of copper screen which could be placed around beds to protect the oysters. Another method using selective chemicals which

stop oyster drills and starfish and predatory crabs on contact is undergoing final testing before its use is recommended to the industry.

(3) Study of the mass mortality of oysters which began in Delaware Bay in 1957 and spread to Chesapeake Bay in 1959. State, Federal, and university scientists are attacking this problem and have found an unidentified microorganism which is suspected of being the causative agent.

(4) Looking to the future. Methods for the artificial propagation of oysters and clams developed at the Bureau's Milford, Connecticut, laboratory make it possible to begin research in genetics and improve on disease resistant strains through selective breeding.

In the future when natural areas suitable for culture of mollusks have been destroyed, we hope to be ready to raise domesticated oysters and clams in an artificial environment.

MOLLUSKS OF ASTRAY LAKE, LABRADOR, AND LAC AIGNEAU, UNGAVA. Rev. H. B. Herrington, Westbrook, Ontario, Canada.

(Abstract)

During 1955, 1956, and 1957, Dr. D. R. Oliver of the Entomology Division, Canada Department of Agriculture, made quantitative collections of the benthic fauna in three lakes in northeastern Canada. These lakes are: Nettilling Lake, a large lake on Baffin Island bisected by the Arctic Circle; Lac Aigneau in northern Quebec (57° 10′ N. Lat., 70° 35′ W. Long.); and Astray Lake in western Labrador (54° 32′ N. Lat., 66° 30′ W. Long.). In 1960 the collections were submitted to the National Museum of Canada. Sorting and identification of the Sphaeriidae were done by the writer, aided by a grant from the latter institution.

In addition to chironomid larvae, which formed the major part of the benthic communities sampled, many sphaeriids were collected. They were unusually thin-shelled. The species collected are listed below. For comparative purposes the Sphaeriidae recorded from Great Slave Lake, Northwest Territories; Lake Athabaska in northern Alberta and Saskatchewan (Herrington, 1950, Canadian Field Nat. 64:25–30); and Lake Nipigon in western Ontario (Herrington, 1957, *ibid.* 71:7–8) are also given. The figures are the percentages based on the total number of sphaeriids collected in that particular lake.

Table.

	Nettilling Lake	Lac Aigneau	Astray Lake	Great Slave Lake	Lake Athabaska	Lake Nipigon
Pisidium casertanum (Poli)	33.0	10.0	16.0	0.3	0	6.0
P. compressum Prime	0	0	0	0	1.2	1.1
P. conventus Clessin	0	3.4	25.0	61.1	28.9	70.6
P. fallax Sterki	0	0	0	0.1	0	0.1
P. ferrugineum Prime (a form)	0	4.6	7.2	0	0	4.0
P. idahoense Roper	0	0	0	1.1	2.0	0

(Continued on next page)

Table (Continued)

	Nettilling Lake	Lac Aigneau	Astray Lake	Great Slave Lake	Lake Athabaska	Lake Nipigon
P. lilljeborgi Clessin	67.0	74.1	40.7	1.4	0.6	5.6
P. lilljeborgi cristatum Sterki	0	0	0	0	0	0.5
P. milium Held	0	0	0	0	0.4	0
P. nitidum Jenyns	0	0.1	0.1	0.4	0.9	1.1
P. nitidum pauperculum Sterki	0	0	0	0.3	0.1	5.8
P. obtusale, f. *ventricosum* Prime	0	0.3	6.1	0	0	0.1
P. punctifera (Guppy)	0	0	0	0	0	0.4
P. subtruncatum Malm (western form)	0	0	0	30.0	62.4	0.3
P. variabile Prime	0	0	4.4	0	0	1.6
P. walkeri Sterki	0	0	0	0	0	0.3
P. walkeri, f. *mainense* Sterki	0	0.1	0.1	0	0	0
Sphaerium lacustre (Muller)	0	0.6	0	0.2	0.1	0.2
S. lacustre, f. *ryckholti* (Normand)	0	0	0	0.1	0	0
S. nitidum Clessin	0	6.4	0.4	4.7	0.1	0.3
S. securis Prime	0	0	0	0	0	0.03
S. striatinum (Lam.)	0	0	0	0.3	0.5	1.7
S. sulcatum (Lam.)	0	0	0	0	0	0.2
S. transversum (Say)	0	0	0	0.1	2.9	0
Total specimens	12	793	834	3,740	856	3,239

The figures represent percent of total sphaeriids collected. Single valves were not included in this table.

(Slides, a map and distribution tables were shown.)

PRELIMINARY OBSERVATIONS ON THE NERVOUS SYSTEMS OF SOME PLEUROCERIDAE. Joseph Rosewater, U. S. National Museum.

(Abstract)

The central nervous systems of nine species of North American Pleuroceridae have been compared and were found to differ from each other in certain respects. The subintestinal ganglion of *Pleurocera canaliculata* (Say) (Magruder[1]) is in close contact with the left pleural ganglion. *Goniobasis interrupta* (Haldeman), *G. simplex* (Say), and *G. semicarinata* (Say) have medium length left pleural-subintestinal connectives and cerebral commissures. *Io fluvialis* (Say) and *Goniobasis virginica* (Gmelin) have long left pleural-subintestinal connectives, but cerebral ganglia are close together as in *Pleurocera*. Subintestinal ganglia of the above six species are about central

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[1] The American Midland Naturalist, vol. 16, no. 6, pp. 900–906 (1935).

in position. *Leptoxis subglobosa* (Say), *L. praerosa* (Say) and *L.* (*Mudalia*) *carinata* (Bruguière) have long cerebral commissures, moderately long left pleural-subintestinal connectives, medium length right pleural-subintestinal zygoneurous connectives, and have subintestinal ganglia located far to the right.

Pleurocera canaliculata **differs from the other species because of the juxtaposition of its left pleural and subintestinal ganglia. A trend toward uniformity in nervous system configuration is present in the genus *Leptoxis*. Statements regarding taxonomic implications of other differences noted must await examination of additional species of the several genera and especially of *Apella* and *Lithasia*.**

Melanopsis dufourii **Férussac (Bouvier[2]) and *M. frustulum* Morelet, of the family Melanopsidae, have nerve configurations similar to those of the Pleuroceridae. Nervous systems of *Potamides ebeninum* (Bruguière), *Cerithidea obtusa* (Lamarck) and *Pyrazus sulcatus* (Born) (as delineated by Bouvier[2]), of the family Potamididae, are close in appearance to *Pleurocera canaliculata*. Interesting, but probably convergent, similarities may be noted in shapes of shells and rhomboidal apertures of *Pleurocera* and *Cerithidea*. The families Pleuroceridae, Melanopsidae, and Potamididae are apparently zygoneurous. Specimens of the Thiaridae, *Melania costata* Quoy and Gaimard (Bouvier[2]), *Thiara granifera* (Lamarck) (Abbott[3]), and of the Cerithiidae, *Cerithium vulgatum* Bruguière (Bouvier[2]) are dialyneurous. This may prove to be an additional character for distinguishing Thiaridae from Pleuroceridae. Sunderbrink[4] found these two conditions one of the few ways of separating the animals of *C. vulgatum* and *M. dufourii*. Other closely related species and genera found to be dialyneurous are *Semisulcospira bensoni* (Philippi) (Itagaki[5]), *Pachymelania*, *Potadoma* and *Cleopatra* (Binder[6]).**

(Anatomy drawings and a series of slides were shown with this paper.)

Discussion—Carriker: "What methods of relaxation and preservation were used in the preparation of these specimens for study?" Rosewater: "The specimens available to me were preserved in 70% alcohol. In a museum situation anatomical studies are usually based on such material. Of course, it would be preferable to work with specimens which were either in a fresh state or relaxed and fixed by some special method. However, the nervous systems of these snails are relatively stable and do not seem prone to distortion suffered by certain other soft parts upon preservation."

Roscoe: "How many specimens of each species were examined?"

Rosewater: "At least six of each species in this preliminary study."

FRESH-WATER MOLLUSKS OF THE JAMES BAY WATERSHED — A PROGRESS REPORT. Arthur H. Clarke, Jr., National Museum of Canada.

(Abstract)

The James Bay watershed occupies a major portion of Ontario and Quebec and covers approximately 250,000 square miles. Its thousands of lakes are drained by ten major river systems and several minor ones. Fresh-water

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[2] Ann. Sci. Nat., 7e Series, Zool., vol. 3, Paris, pp. 1–510 (1887).
[3] Proc. U.S. Nat. Mus., vol. 102, no. 3292, pp. 71–116 (1952).
[4] Zeits. f. Morphol. u. Ökol. d. Tiere, Berlin, Bd. 14, Heft 2, pp. 261–337 (1929).
[5] Venus, Fukuyama, vol. 21, no. 1, pp. 41–50 (1960).
[6] Revue Suisse de Zoologie, Genève, vol. 66, fasc. 4, no. 32, pp. 735–759 (1959).

mollusks from parts of the region have been listed occasionally but except for that portion of the Albany River system treated by Baker and Cahn (1931, Nat. Mus. Canada, Ann. Rep. for 1929) no large sections have been studied in detail. Several of the largest river systems have never been reported upon at all.

During the summer of 1960 the writer began a survey of the fresh-water mollusks of the James Bay watershed as part of a long-range study of the fresh-water mollusks of the Hudson Bay drainage. The area examined lies within a subdivision of the Canadian Shield called the Great Clay Belt. Rain was plentiful and the mean temperature was about 62° F. The annual mean is approximately 33°. Black spruce and muskeg are characteristic of the poorly drained clay plain which comprises most of the region.

During the survey forty-seven stations were visited within the Nottaway, Harricanaw, Moose, and Albany river systems and forty-one species and well-defined subspecies were collected. In general the fauna is rather similar to that of the adjacent portions of the St. Lawrence drainage. Especially noteworthy, however, are a loosely coiled *Valvata* from Klotz Lake, Ontario, and a short, high *Anodonta* with concentric beak sculpturing from the Chibougamau River in northern Quebec. It is hoped that further studies now under way will add significant details to our knowledge of molluscan distribution of the area and provide additional clues for tracing post-glacial drainage patterns.

(A habitat study by means of Kodachrome slides was shown, also charts illustrating occurrence of species in the areas pictured.)

A COMPARISON OF TWO UNIONID POPULATIONS, ONE ANCIENT, ONE RECENT. Max R. Matteson, University of Illinois, Urbana, Illinois.

(Abstract)

During the summer of 1960, Dr. John C. McGregor, anthropologist, University of Illinois, excavated a large Indian village which had existed about 1800 A.D. on the south bank of the Rock River, near Rock Island, Illinois. Although a large number of fresh-water mussels was collected from this village, a very large midden of valves from a former village representing Archaic culture was uncovered. This village existed 6,000 to 8,000 years ago. The author has identified 6,590 of these valves. The midden produced 34 different forms. An inventory of fresh-water mussels today was taken in the river adjacent to the site so that a comparison could be made with the former population. The resultant collection included 549 living mussels which represented 21 forms.

In general, the habitat-demands of the mussels removed from the site portray a river very similar to the Rock River as it exists today. However, an increase in number of those mussels which tolerate silt suggests that the present substratum contains larger areas of silt. Unusually large representation by certain species and the complete lack of other species suggest that the Indians may have shown a preference for certain forms of mussels.

(The slides which accompanied this paper displayed shells from middens in juxtaposition with recent shells from the same area.)

COLLECTING *MELANOPSIS* IN NEW CALEDONIA. Joseph P. E. Morrison,[1] U.S. National Museum.

(Abstract)

An expedition to collect the materials for a Coral Reef exhibit in the new Hall of Oceanic Life of the United States National Museum made possible the collection of certain other mollusks of great interest.

The genus *Melanopsis* is a relict group, surviving from Spain eastward to Iran, and on New Caledonia and New Zealand in the Pacific. It is the dominant or the only type of snail in many streams of southern New Caledonia. Species of the typical subgenus *MELANOPSIS* live here in fresh, brackish, and marine waters. The spires of these shells are normally truncated by corrosion. *Melanopsis aperta* Gassies was found in only three mountain streams. *Melanopsis frustulum* Morelet lives here in enormous numbers in brackish waters. The length of mature *M. frustulum* shells varies from 5 to 16 mm. under different estuary stream conditions. *Melanopsis frustulum retoutiana* Gassies is a salt water form, living abundantly on the eroding raised coral reef limestone along shore, near intertidal springs at Touaourou, on the southeastern coast.

The subgenus *ZEMELANOPSIS* is represented on New Caledonia by *Melanopsis (Zemelanopsis) mariei* Crosse. These shells differ from all others known from fresh water because they re-cover the spire to prevent effectively the (acid) corrosion of the shell in (soft) fresh waters. When the juveniles possess four whorls, the aperture is extended posteriorly over the spire whorls, whether the apex is eroded or not. For about one additional whorl, the spire is completely re-covered with shell material and periostracum. As the shell approaches maturity, the posterior expansion of the aperture is again reduced, and the suture descends rapidly. Fully adult shells of *M. (Z.) mariei* externally show only the last 2 or 3 whorls. Actually these shells possess 6 or 7, including the 4 re-covered spire whorls.

***Reference*—Franc, Andre. 1956. Mollusques Terrestres et Fluviatiles de l'Archipel Neo-Caledonien, Mem. Mus. d'Hist. Nat., n.s., A. Zoologie, t. XIII.**

Dr. Morrison showed color slides of the various New Caledonia habitats of *Melanopsis,* from the forest-shaded mountain tributaries to the Coconut-grove seashore at Touaourou. He also showed slides of the spire-enwrapping juvenile shells of *Zemelanopsis,* that have the shape of *Atys* when the aperture equals 100% of the shell height.

Dr. Morrison in the winter of 1960–61 collected fauna from a coral reef for a habitat group for the U. S. National Museum, but when the weather or tides were unfavorable he turned his back upon the ocean and sought out brackish and fresh-water species in the rivers and mountain streams of New Caledonia. A series of Kodachrome slides transported Dr. Morrison's audience about the beautiful island.

A MOLLUSK COLLECTING EXPEDITION TO MADAGASCAR. Richard W. Foster, Museum of Comparative Zoology, Cambridge, Massachusetts.

This was another series of color slides of magnificent shells, this time collected at various places about the island of Madagascar for the purpose of filling area gaps in the collection of the Academy of Natural Sciences.

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[1] Published by permission of the Secretary of the Smithsonian Institution.

The afternoon program was completed with this paper. Following dinner (by which time the rain had slowed to a drizzle) everyone returned to the Museum. The Executive Council met at this time, forced by duty to miss the entertainment enjoyed by the rest of the group. A movie entitled "The Sea Scallop Fishery" presented by Dr. Arthur S. Merrill was much enjoyed:

(Abstract)

An important year-round fishery for the sea scallop, *Placopecten magellanicus* (Gmelin) is carried on along the Atlantic coast. This scallop is fished commercially from off Prince Edward Island southward to offshore in the area of Cape Henry, Virginia. However, most of the total catch is taken in the relatively limited area of Georges Bank, off Massachusetts, by United States and Canadian scallop fishermen. The scallops are shucked at sea, the meats bagged, iced, and stored below deck until return to port. Most U. S. vessels land and auction their scallops at New Bedford, Massachusetts. Over 200 million pounds of meats (about 6 billion scallops) have been taken from Georges Bank by the New Bedford fleet from 1945 through 1960. In 1960 total landings exceeded a record 32.4 million pounds.

In 1954 a program was established by the Bureau of Commercial Fisheries Biological Laboratory at Woods Hole, Massachusetts, to investigate the sea scallop fishery. Here vital statistics of the fishery, collected from interviews at key ports along the coast, are processed and analyzed. Basic data are collected by periodically surveying and sampling the scallop grounds with a research vessel. These data are used to determine the potentially productive grounds and to predict the strength of pre-recruit year classes. An essential part of the program is an understanding of the population dynamics of the fishery. This necessitates studies in growth and mortality rates, and mesh selection experiments with the scallop dredge. Studies in basic biology include several diverse enterprises such as culturing larvae and collecting spat for early life history studies, time and cause of formation of annual rings, seasonal cycle of gametogenesis and spawning, and seasonal and areal variation in length-weight ratios.

Our studies to date have led recently to a request through the International Commission for the Northwest Atlantic Fisheries for a regulation to increase the ring size in the mesh of the scallop dredge from 3 inches to approximately 4 inches, the exact size is yet to be determined. This will effectively postpone capture of small scallops for about a year. The increase in meat weight will more than offset the loss by mortality thereby increasing the total meat yield to the fishery.

This was followed by the traditional showing of slides taken by members; vacations in faraway places are thus shared in retrospect while candid shots of unsuspecting delegates to earlier meetings always create much merriment.

The sun returned on Thursday. As had been the case on the two previous days, the full program left almost no time for questions or discussion.

SOME VARIATIONS IN SEXUALITY AMONG NORTH AMERICAN NAIADES. Henry van der Schalie, University of Michigan, Ann Arbor, Michigan.

(Accompanied by slides of anatomy drawings and specimens.)

FURTHER STUDIES ON NORTH AMERICAN ANCYLIDS. Paul F. Basch, Kansas State Teachers College, Emporia, Kansas.

(Abstract)

Although marine snails of limpet-like shape have long been classified in many different families, it has been customary to place most fresh-water limpets in the family Ancylidae. Recent investigations suggest that this "family" is actually an artificial assemblage containing species groups of diverse origins.

With the aid of a research grant from the National Science Foundation, the author is currently studying the fresh-water limpets of North America in an attempt to determine the proper relationships among the dozens of named species. To this end an extensive study of types and other museum specimens has been conducted, and a collecting trip planned to cover 15,000 miles is currently (June, 1961) in progress.

(Blackboard and screen were utilized to depict species characteristics and distribution.)

SOME CYTOLOGICAL ASPECTS OF *ACROLOXUS LACUSTRIS* (LINNAEUS), John Bayard Burch, University of Michigan, Ann Arbor, Michigan, with a discussion of systematics in fresh-water limpets.[1]

(Abstract)

Until 1925 all fresh-water limpet-like mollusks were placed in the family *Ancylidae* Rafinesque 1815. However, it was recognized prior to this date that the species comprising this taxon probably were of polyphyletic origin (cf. Gwatkin, 1914; Walker, 1923). In 1925 Pilsbry raised Walker's (1917) subfamily *Lancinae* to family status because of its lymnaeid-like radula. Wenz (1938) again subordinated *Lancinae* to subfamilial rank, but within the *Lymnaeidae*.

Thiele (1926) considered Hannibal's (1912) *Latiinae* as a separate family. Wenz (1938) raised Hannibal's (1912) subfamily *Neoplanorbinae* and Walker's (1917) subfamily *Ferrissinae* to family status, and designated yet another family separate from the *Ancylidae*, the *Ancylastridae* (= *Acroloxinae* Thiele?). Bondesen (1950) proposed splitting off the limpet *Acroloxus lacustris* (Linnaeus) from the rest of the *Ancylidae* and raising Thiele's (1931) subfamily *Acroloxinae* to the family *Acroloxidae* because of its strikingly different egg-capsule morphology (*Natura Jutlandica*, 3: 1–208). More recently Zilch (1959) raised Walker's (1917) *Rhodacmeinae* to familial rank solely from a consideration of shell characters.

The present cytological study of spermatogenesis in *Acroloxus lacustris* tends to strengthen Bondesen's contention that this species should be placed

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[1] This investigation was supported (in part) by a research grant, 2E-41, from the National Institute of Allergy and Infectious Diseases, U. S. Public Health Service.

in a family by itself. Indeed, a consideration of these same differences would tend to further separate *Acroloxus* from other *Basommatophora.*

Details giving the cells of spermatogenesis a different appearance include the volume ratio of chromatin to cytoplasm, the large size of the chromosomes (ca. 3.5–7 micra), the appearance of the spermatids and morphology of the mature sperm (cf. also Retzius, 1906, *Biol. Untersuch. N. F.*, 13, Nr. 1: 1–36).

(Illustrated by projected micro-slides, charts and graphs.)

VARIATIONS IN THE ANATOMY OF *OXYLOMA RETUSA* (LEA).

Dorothea Franzen, Illinois Wesleyan University, Bloomington, Illinois.

(Abstract)

The result of a study made of anatomical variations in *Oxyloma retusa* (Lea) as occur within a population are described. The study includes collections made from eleven stations in the states of Minnesota, Iowa, Kansas, and Illinois.

The penial appendix, a structure characteristic of the genus *Oxyloma*, varies considerably in size in individuals of the same population. Typically it is a digitiform structure. Variations range from an inflated to a reduced appendix, and even to one not recognizable as being present.

Of the paired seminal vesicles, usually unequal in size, either the right or the left is the smaller. Sometimes both are equal in size.

The pigmentation of several structures is variable. In the seminal vesicles this is demonstrated to a certain degree. The hermaphroditic duct may have a lightly peppered pigmentation, may be moderately pigmented, or may be almost a solid black. The mantle is also variably pigmented from a moderate amount to one which is black in appearance.

There are significant differences in the maximum size of the shell of the various localities. Of the several populations studied the smallest shells, 9.3 to 10.5 mm. were found along the shore of the Mississippi River as it flows out of Lake Itasca and along the shore of a small roadside pond 10 mi. northeast of Lake Itasca State Park. The largest shells, 19.9 to 13.6 mm. were found in a swampy area among cattails in the vicinity of Miller's Bay, Lake Okobojie, Iowa. There is apparently no geographical pattern which might indicate subspeciation and, therefore, the difference in the size of the shells is regarded only as a variant.

(Blackboard and projected anatomical drawings illustrated this paper.)

CENSUSING MOLLUSKS, OR VARIATIONS ON THE NUMBERS GAME.

Alan Solem, Chicago Natural History Museum.

(Abstract)

Current estimates of the known number of living species of mollusks vary from 40,000 to 120,000. This is the widest range for any animal group, reflecting the absence of monographs for many families, great uncertainty in many groups as to what constitutes a species, and the failure of malacologists to provide estimates in recent years. The last family by family tally of living molluscan species was by Woodward in 1875, who totaled 20,109 species. Estimates of 60,000 by Pratt in 1912 and 104,000 by Arndt in 1930 were apparently only guesses and therefore not reliable. Schilder's 1947

attempt to calculate the species of prosobranchs is demonstrably faulty, since his 1,562 cyclophorid species compare with a count of 2,308 from monographs and the "Zoological Record," or an error of 46%.

Equally difficult to determine is the number of individual mollusks in a given locality at one time. Such figures, by themselves, have little intrinsic value, since numbers of a species fluctuate widely from season to season and year to year. They can, however, be useful in comparing the populations of two areas and in following changes in population density.

Per acre population guesses for land snails vary widely. Data gathered by McAtee in 1907 near Washington gives 119,790 snails per acre in woodlands and 217,800 in meadowlands. John Ford totaled 273,000,000 animals per acre in an English pasture of which 240,000,000 were collembolans, 566,000 snails, and 87,000 slugs. In open pasture and reforested fields near Ashville, North Carolina, Jacot in 1934 estimated 43,000 snails per acre for a pastured lot; 1,163,000 per acre for a 70-year-old stand of yellow pine and oak; and over 4,500,000 per acre for a 120-year-old damp hardwood core.

Subtropical montane forests are even richer in snails. Two samples from Natal analyzed by Lawrence in 1953 were from 5,600′ elevation. The first suggested that snails formed 2,493,000 of the 304,000,000 animals per acre; the second that they formed 11,480,000 of the 287,000,000 animals. Samples from similar cloud forest in Panama collected by myself are under analysis. Preliminary study suggests a population level of 1,225,000 to 7,000,000 snails per acre.

None of these figures can be considered typical or average, but they do suggest that, at least under favorable conditions, land snails can be very abundant and form a significant portion of the soil fauna.

(Dr. Solem used the blackboard to chart his figures.)

REMARKS ON *NETTASTOMELLA AND JOUANNETIA*. Ruth D. Turner, Museum of Comparative Zoology, Cambridge, Massachusetts.

(Abstract)

The genera *Nettastomella* and *Jouannetia* are rock boring bivalves belonging to the family Pholadidae. The genus *Nettastomella* is characterized by being bilaterally symmetrical, having only a partial calcareous callum, having the siphonoplax on both valves and in lacking a dorsal plate. *Jouannetia* is characterized by being inequivalved, having a very large entirely calcareous callum which is larger on the left valve than on the right, having the siphonoplax only on the right valve and in having a dorsal plate. The young of both these genera are remarkably similar in appearance, however. Living specimens of *Nettastomella japonica* Yokoyama from Masset, British Columbia, Canada, received through the kindness of Mr. Peter Hensen has characters which relate this species to both the above mentioned genera. It has only a partial calcareous callum but is inequivalved, has the calcareous portion of the callum much wider on the left valve than on the right and has the siphonoplax only on the right valve. The anatomy of *N. japonica* is very close to that of *Jouannetia cumingii* Sby. as described by Egger but the anatomy of other species in these genera is unknown so that no real conclusions can be drawn. The lack of a good fossil record makes it impossible at this time to make any positive statement concerning the origin of the

Pholadidae or to trace the evolution within the family. Much more material, both recent and fossil is needed for these studies.

(Accompanied by projected anatomical drawings and photographs in color and in black and white.)

This paper completed the morning session. The group photograph was taken at noon, and at 1:00 P.M. the annual business meeting was called to order.

Reading of the minutes of the previous business meeting was waived since an accounting of proceedings had appeared in the 1960 report bulletin.

The reports of the Secretary-Treasurer were read. The Secretary's report noted that during the past twelve months 73 new members had been added, 7 lost by death, 8 resigned and 39 dropped for delinquent dues. The June 1, 1961 roster of 738 active and corresponding members was another all-time high. Of these, 160 live west of the Rockies thus are also Pacific Division members. Two honorary life members (Dr. Ralph Arnold, Dr. Julia Gardner) were lost by death as were two members of the Executive Council (Past President Jeanne S. Schwengel, and Howard R. Hill, Pacific Division Chairman).

The 1960 annual report bulletin cost $1.41 per copy to print and mail. The popular booklet HOW TO COLLECT SHELLS was reprinted at a per copy cost of $1.50.

Finally, in view of the fact that the membership is becoming too large to be handled from one office, the Secretary-Treasurer had requested the Executive Council to consider splitting the offices into Secretary (Recording and Corresponding) and Treasurer, respectively.

The second report on the state of the AMU treasury was somewhat disturbing, listing as it did expenditures slightly ahead of receipts. (A complete financial report appears on page 28.)

These two reports were approved as read.

The report of the action taken by the Executive Council opened with the statement that a committee headed by Dr. Alan Solem had made an exhaustive review of the financial condition of the AMU. After hearing his report the Council voted to follow his recommendation that the annual dues be increased one dollar for individual members, joint membership to be increased one dollar (i.e., husband-wife membership $4.00) and life membership to be advanced to $60.00, the equivalent of twenty years' dues.

(Other action taken by the Council but not reported at the business meeting was consideration of the held-over petition of the Pacific Division that a special assessment be made upon those AMU members residing west of the Rockies [who thus automatically become Pacific Division members] of a fee to aid in the financial operation of that body. Again following the recommendation of Dr. Solem, the Council voted to sanction any assessment which the Pacific Division chooses to levy upon its members, and instructed the AMU Treasurer to collect such monies along with the regular dues and to refund same to the Pacific Division Treasurer at periodic intervals.)

Taken under consideration by the Council was the proposal by the Secretary-Treasurer that those offices be split between two persons. Since, to create two new offices (and to abolish the existing arrangement) will require a change in the AMU Constitution, the first step was taken by putting the proposal in writing; this written proposal was signed at once by five members.

No decision was reached on the site for the 1962 meeting, but a committee of two (Emerson, Teskey) was appointed to select the date and place.

The suggestion was made that in view of the rapidly growing membership of the AMU, incorporation as a non-profit scientific society might well be considered. A committee was appointed by President Pulley (Abbott, Morrison, Rehder) to look into this matter and to report back to the Executive Council at or before the 1962 meeting.

The Chairman of the Nominating Committee (Turner) presented the following slate of nominated officers:

President, William K. Emerson;
Vice-President, Albert R. Mead;
2nd Vice-President, Robert W. Talmadge;
Secretary-Treasurer, Margaret C. Teskey;
Publications Editor, Morris K. Jacobson;
Councillors-at-large: John Bayard Burch,
H. B. Herrington, Edward H. Michelson,
Virginia Orr.

The Executive Council voted unanimous approval of this slate.

It was also announced to the Council that to fill the two vacancies in the honorary life membership ranks, the nominating committee had selected on the basis of publications, research, and dedication to the American Malacological Union, Dr. William J. Clench and Dr. Katherine V. W. Palmer.

The report of the meeting of the Executive Council was concluded at this point. President Pulley called for additional nominations from the floor. The motion was made, seconded and adopted that the Secretary be instructed to cast one ballot for election of the slate as read.

The President reminded his fellow members that before the proposal for alteration of the Constitution may go before the membership at large to be balloted on by mail, it must be acted upon "at the next regular meeting"—i.e., the present occasion. The motion was made, seconded and unanimously adopted that the proposal go before the membership-at-large as having received approval at the 1961 business meeting.

With this action the business meeting was concluded and the following papers occupied the remainder of the afternoon:

HINGE TOOTH REVERSAL IN POPULATIONS OF OHIO SPHAERIIDAE. Frank E. Eggleton and George M. Davis, University of Michigan, Ann Arbor, Michigan.

(Abstract)

Around 1952 a collection of 1,597 Ohio Sphaeriids was sent to the senior author at the University of Michigan by H. R. Eggleston who with D. T. Jones, had made collections from 57 localities in 29 counties between 1925 and 1935.

An analysis of populations of *Sphaerium* and *Musculium* showed that the majority of specimens were *Sphaerium striatinum*. The largest collections were taken from the Scioto and Muskingum River drainage systems.

In Sphaeriids the hinge teeth are arranged in 3 groupings; typically with two posterior lateral cusps in the right valve and one in the left, one cardinal cusp in the right valve and two in the left, two anterior lateral cusps in the

right valve and one in the left. The single cusp of one valve fits tongue and groove fashion in the space between the two cusps of the other valve.

Variance in this arrangement constitutes reversal, e.g. two posterior laterals in the left valve and one in the right. The specimens studied in this investigation had a reversal rate of 12.1 percent and of the reversals, the posterior laterals were reversed 40.5 percent, the anterior laterals and cardinal on the same valve 41.0 percent, and complete reversal 18.4 percent.

The rate of reversal for populations of *S. striatinum* from the two drainage systems was not constant but varied from 0 to 19 percent. The posterior lateral reversal was predominant in the Muskingum system; in the Scioto system each type of reversal was predominant in at least one population.

THE MOLLUSCAN SEA GRASS COMMUNITIES IN BISCAYNE BAY.

Donald R. Moore, University of Miami.

(Abstract)

The sea grass, *Thalassia testudinum*, is found in shallow marine waters throughout most of the West Indian region. It is the home of countless numbers of animals which include many mollusks. Since October, 1960, the Institute of Marine Science of the University of Miami has maintained two stations in Biscayne Bay where the *Thalassia* communities have been sampled monthly. These samples have been taken with a push net and with a 1/10 meter bottom sampler.

The station on the mainland side of the bay, where physical conditions are more rigorous, has produced only a few species of mollusks, but some of these are present in vast numbers. The most abundant mollusk, *Caecum pulchellum*, was present in numbers exceeding 13,000 per square meter in one bottom sample. There was a considerable difference in the faunal composition of the samples taken by the two types of collecting gear. *Bittium varium* was the most abundant gastropod taken in the push net. The 1/10 meter sampler showed that two bottom dwelling gastropods, *Caecum pulchellum* and *Rissoina chesneli*, were more numerous, but were seldom high enough on the grass blades to be picked up by the push net. For *Caecum pulchellum*, the bottom sampler to push net ratio was a thousand to one.

The station on the seaward side of the bay is much more stable in regard to salinity and temperature, and the mollusk community is represented by a much larger number of genera and species. No species is present in large numbers, and there are many more kinds of predatory gastropods.

ORIGIN OF THE MOLLUSCAN FAUNA OF FLORIDA.

William J. Clench, Museum of Comparative Zoology, Cambridge, Massachusetts.

A CENTURY OF CHANGE IN THE NAIAD POPULATION.

David H. Stansbery, Ohio State University, Columbus, Ohio.

(Abstract)

An attempt has been made to summarize the changes which have occurred in the naiad fauna of central Ohio during the last century. The area concerned is the entire Scioto River Drainage above Circleville, Ohio. Data have been obtained from the published writings of Say (1819), Conrad

(1836), Sullivant (1838), Kirtland (1838), Higgins (1858), Sterki (1907), Price (1940) and from collections of subfossil shells, recent shells and living specimens made during the period 1955–1961. The term subfossil is used here to indicate the old, weathered, shells of naiads which have apparently been dead for a long time. Many such specimens have been found "in situ" in stream banks overlain by several feet of formed soil or in the gravel debris of stream flood washouts. Such collection sites as these indicate an age of hundreds or perhaps thousands of years. In the absence of fresh specimens, subfossil records are interpreted as evidence of the previous existence of a species at or near the collecting site.

The Higgins paper (1858) is used as a base of reference in this report since he limited his catalogue to those species in "the vicinity of Columbus" and since our own collections have been largely limited to this same area. The downstream boundary of Circleville is probably somewhat beyond the area considered by Higgins. This is indicated by the fact that the eight species we have been able to add to Higgins' list are mainly downstream forms. These have been found either as subfossils at or near Circleville or as recent specimens in the lower reaches of downstream tributaries.

Only one record in the Higgins' list seems to be in error. His record of *Unio subrostratus* Say as "very common" apparently represents the presence of the superficially similar *Villosa iris* (Lea, 1829). The latter is a species common throughout the area and is not listed by Higgins.

Higgins described the naiad fauna of 1858 as follows:

> "Gentlemen who collected the shells of this vicinity in early times, found many species in great abundance which have at this day totally disappeared or are represented by occasional straggling specimens, and all species with but few exceptions, have gradually decreased in numbers . . ."

It thus appears that the extirpation of our naiad fauna had commenced some time before the advent of large amounts of domestic and industrial stream pollutants. The factors responsible for this early found decrease are not known. Trautman in his *Fishes of Ohio* (1956) reviews stream conditions during the 1801–1850 period and cites sawdust, brewery and slaughterhouse wastes as the principle pollutants of the time. Siltation either was not a problem then or at least was not recognized as such. Since nearly all the species which have become extirpated from the area considered have been riffle forms, it seems probable that the factor or factors responsible are in some way related to riffles. Whatever the cause of the disappearance of 15 species from the entire study area, it seems certain that the complete absence of naiades from the Scioto River between Columbus and Circleville must be due to the past action of domestic and industrial pollutants from Columbus.

Tabular Summary of Faunal Changes

Total Number of Forms Recorded for Upper Scioto River Drainage ---- = 52
    Extirpated forms recorded as subfossils only ---- = 4

Total Number of Forms Recorded by Pioneer Naturalists before 1858 = 48
    Extirpated forms noted as absent in 1858 by Higgins ---- = 6

Total Number of Forms Recorded as Living in 1858 by Higgins ---- = 42
    Extirpated forms becoming absent since 1858 ---- = 5

Total Number of Forms Recorded by Living or Fresh Shells Today ...... = 37
Forms represented today by 1 or 2 living specimens, a few fresh shells only or a single relict population ...... = 13

Total Number of Species Represented Today by at Least 2 Living Populations ...... = 24

(As he concluded, Dr. Stansbery supplied his audience with checklists of the species under discussion.)

With this paper the afternoon session was ended, as was the academic portion of the meeting. Came a hurried exodus to the hotel, and at 5:45 the buses were boarded once again, this time to transport the group, now finery bedecked, to the Columbia Country Club in Chevy Chase, Maryland. The occasion was the annual dinner and again the local committee had chosen wisely. The setting was most attractive, the social hour erased the cares of the day and the banquet of Maryland fried chicken (naturally!) was delicious.

The place cards were especially admired. Upon simple white cards, adorned each with a shining *Cypraea*, guests found his or her name inscribed in elegant shaded penmanship reminiscent of the 1800's. The calligraphist was Mrs. Lawrence E. Imhoff, a member of the National Capital Shell Club and whose talents are often in demand by the White House on occasion of state dinners.

Following dinner, President Pulley arose to introduce those at the head table, then called the roll of the thirty local shell clubs, most of which are affiliated with the AMU. He invited members to stand as their club was called; many were members of two or more clubs. Indeed, Rose and John Burch bobbed up and down like two corks!

Last to be called was the National Capital Shell Club whose members had been responsible for the great success of the meeting. The standing ovation accorded these hard-working people was spontaneous and sincere.

President Pulley then introduced his successor, Dr. William K. Emerson, handing over the gavel with the admonition to use it without stint. Dr. Emerson promised to cherish it until it shall be time to call the 1962 meeting to order. He invited all present to attend that meeting, wherever and whenever it may be held.

While this had been going on the tables were being cleared and a motion picture projector set up. Dr. Pulley (Past President now) explained that with the cooperation of the U. S. Navy and the Houston Underwater Club he had been able to conduct an expedition to the "Flower Garden Banks" located 125 miles off Galveston, Texas, and in 60–90 feet of water. Here was found a beautiful typical West Indian coral reef with more than 15 species of reef-building corals and all the fishes, mollusks, and other sea life so characteristic of the tropics.

Although earlier investigators had collected dead and worn coral specimens from the flanks of these banks, they did not believe that corals could now live so far north in the Gulf. These specimens had been regarded as fossils, and the nearest living shallow water coral reef was thought to be off Cabo Rojo near Tampico, Mexico.

The presence of this thriving coral reef off Galveston must be explained by the moderating influence of 125 miles of sea water on the cold north winds of winter that often sweep across Texas and out into the Gulf. At any rate, the films shown by Dr. Pulley left no doubt that here was a flourishing reef where the temperature must never fall much below the 70 degrees Fahrenheit or so that is tolerated by the reef-building corals. The film of scenes on the mother ship, divers in action, the reef and its inhabitants was entertaining and instructive and enjoyed to the utmost.

Brief remarks by Mr. Vincente Conde concluded the evening; he relayed the greetings of the members of the staff of the Redpath Museum, all well-known to his audience since the AMU had enjoyed the hospitality of that group in 1960. He also asked for patience and understanding of the plight of his Cuban colleagues in these trying times.

The field trip on Friday morning saw about thirty people depart in private cars for the 45-mile trip to Scientist's Cliffs on Chesapeake Bay, famous for the Miocene fossils which stud the high clay banks. Fortified with box lunches, the true collectors descended to dig fossil shells from the cliff or to collect those washed up at tide line while others stayed behind to enjoy the shade and perhaps a bit of gossip.

Greatly sought after but found only as occasional fragments was *Ecphora quadricostata* Say which had adorned the cover of the programs together with the information that it was the first American fossil to be described in scientific literature. However, beautifully sculptured valves of *Pecten madisonius* were abundant as were several other species.

An afternoon shower brought an end to collecting and the trip back to Washington was the final event of the 1961 annual meeting.

Margaret C. Teskey, Secretary
AMERICAN MALACOLOGICAL UNION

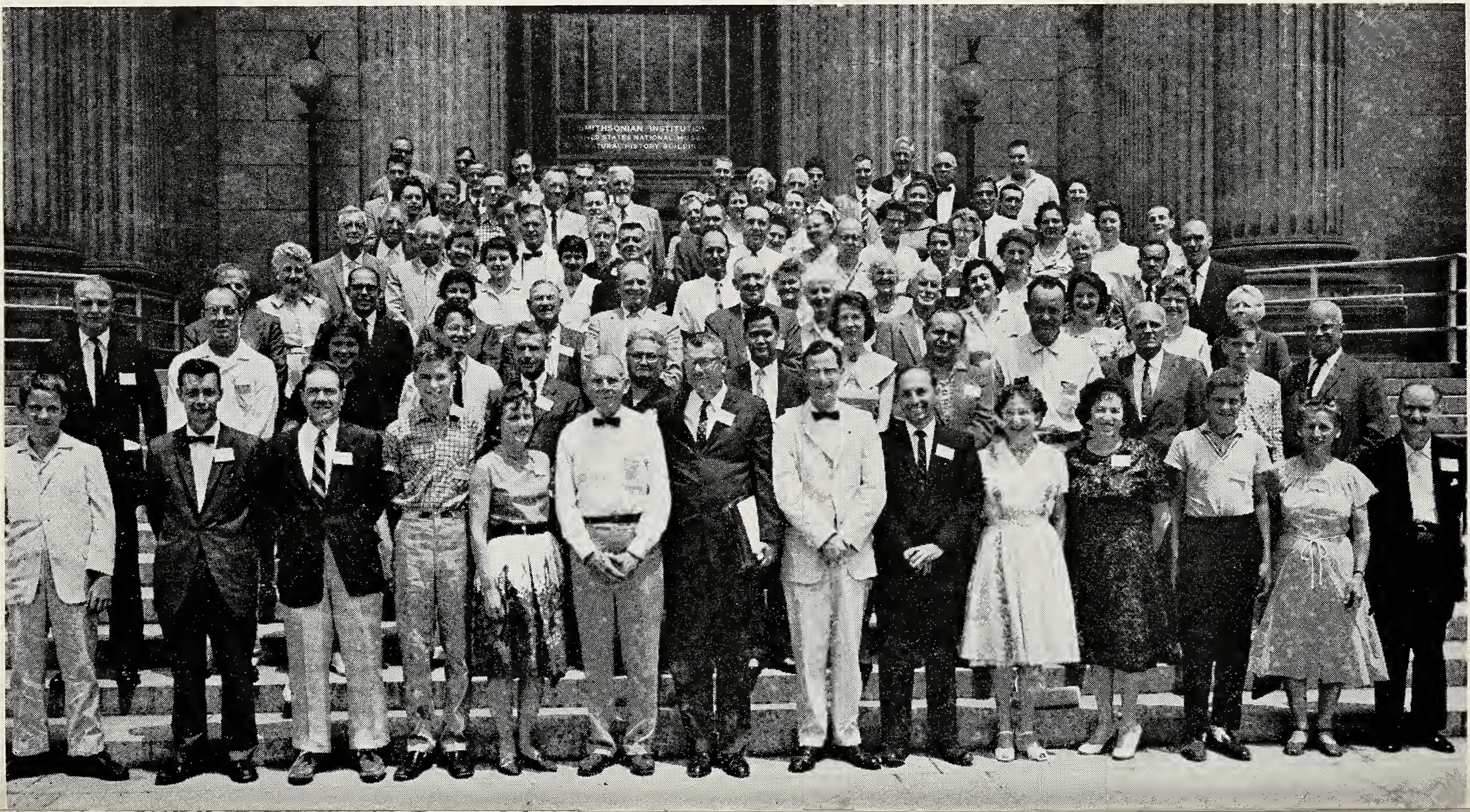
ATTENDED THE 1961 AMU MEETING

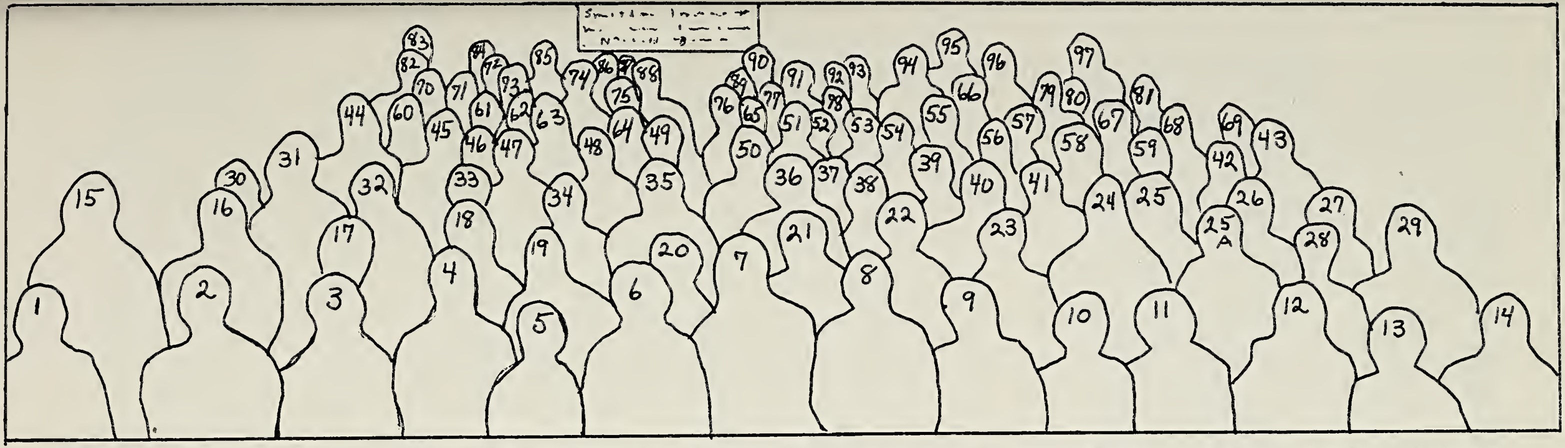
Dr. R. Tucker Abbott, Philadelphia
Dr. J. Frances Allen, W. Hyattsville, Maryland
Miss Letha S. Allen, Baltimore
Lester E. Allen, Yarmouth, Nova Scotia
Miss Katherine M. Anderson, Chillicothe, Ohio
Mrs. Norma Ashbery, Buffalo, New York
Capt. and Mrs. Carl I. Aslakson, Bethesda, Maryland
Herbert D. Athearn, Cleveland, Tennessee
Chris Bailie, Ottawa, Ontario, Canada
Dr. and Mrs. Horace B. Baker, Havertown, Pennsylvania
Dr. Paul F. Basch, Emporia, Kansas
Theodore Berrier, Washington, D. C.
Mr. and Mrs. Alger P. Blaine, Springfield, Massachusetts
Mrs. H. M. Bixby, Bolton Landing, New York
Allen Brimmer, Bethesda, Maryland
James Broadus, Mobile, Alabama
Dr. John Bayard Burch, Ann Arbor, Michigan
Mr. and Mrs. John Q. Burch, Los Angeles
Mrs. Thomas A. Burch, Silver Spring, Maryland
Miss Ruth Cahoon, Scranton, Pennsylvania

Dr. Melbourne R. Carriker, Osford, Maryland
Major and Mrs. Walter N. Carpenter, Springfield, Virginia
Dr. and Mrs. J. Lockwood Chamberlin, Alexandria, Virginia
Mr. and Mrs. Martin J. Chicoine, Washington, D. C.
Dr. and Mrs. Arthur H. Clarke, Jr., Ottawa, Ontario, Canada
Dr. William J. Clench, Cambridge, Massachusetts
Mrs. Juliette Compitello, Brooklyn, New York
Mr. Vincent Conde, Montreal, Quebec, Canada
Dr. Henri E. Coomans, New York City
Edward F. Cowles, Jr., New Rochelle, New York
Mr. and Mrs. Anthony D'Attilio, Valley Stream, New York
Lawrence D'Attilio, Valley Stream, New York
George M. Davis, Ann Arbor, Michigan
Dr. Charlotte Dawley, Greensboro, North Carolina
Mr. and Mrs. Harris P. Dawson, Jr., Washington, D. C.
Bonifacio C. Dazo, Ann Arbor, Michigan
William E. Dodd, M.D., Beach Haven, New Jersey
Dr. Dolores Dundee, New Orleans, Louisiana
Dr. William K. Emerson, New York City
Theodore F. Endres, Detroit, Michigan
Carl Erickson, Auburn, Massachusetts
Richard Foster, Cambridge, Massachusetts
Dr. Dorothea Franzen, Bloomington, Illinois
Mrs. George B. Fraser, Washington, D. C.
Sam Fuller, Suffield, Connecticut
John Glude, Alexandria, Virginia
Henry S. Gordon, New York City
Frank Wayne Grimm, Catonsville, Maryland
Kenneth Grove, Pittsburgh, Pennsylvania
Mrs. Kathryn Hallestelle, Springfield, Virginia
Rev. and Mrs. H. B. Herrington, Westbrook, Ontario, Canada
Mr. and Mrs. Edson A. Hayes, Washington, D. C.
Marion L. Heise, Washington, D. C.
Mr. and Mrs. LeRoy Heist, Alexandria, Virginia
Mrs. Florence and Miss Joan Higbee, Arlington, Virginia
Mrs. E. Holdway, Buffalo, New York
Miss Sylvia Homer, Brooklyn, New York
Leslie Hubricht, Atlanta, Georgia
Mr. and Mrs. Lawrence E. Imhoff, Washington, D. C.
Mr. and Mrs. Ralph W. Jackson, Cambridge, Maryland
Charles E. Jefferson, Silver Spring, Maryland
Mrs. George Kline, Madison, New Jersey
Miss Joan Koenig, Atlanta, Georgia
Mrs. Bella Kudatsky, Forest Hills, New York
Donald Kuntz, Bridgeport, Connecticut
Mr. and Mrs. Arthur Lawson, Pass-A-Grille, Florida
Mr. and Mrs. A. Lothrop Luttrell, Rockville, Maryland
Mrs. Grace R. MacBride, North Wales, Pennsylvania
Col. and Mrs. William A. McCarty, Alexandria, Virginia
Mr. and Mrs. Robert H. McPhillamey, Washington, D. C.

Jesse Mantel, Rockville, Maryland
Dr. Max R. Matteson, Urbana, Illinois
Norman Meese, Jr., Kensington, Maryland
Dr. Arthur S. Merrill, Woods Hole, Massachusetts
Harvey G. Meyer, Knoxville, Tennessee
Donald Moore, Miami, Florida
Ricardo Gallego Moreno, Leyte, Philippine Islands
Mr. and Mrs. Joseph Morris, Bethesda, Maryland
Dr. and Mrs. Joseph P. E. Morrison, Falls Church, Virginia
Mrs. Michael P. E. Morrison, Falls Church, Virginia
Mr. and Mrs. Louis B. Mousley, San Bernardino, California
Dr. J. N. Noshpitz, Washington, D. C.
Miss Elsa Nyberg, Marblehead, Massachusetts
Dr. Ella H. Oppenheimer, Baltimore, Maryland
Miss Virginia Orr, Philadelphia
Mrs. Ruth M. Ostheimer, Whitford, Pennsylvania
Dr. and Mrs. E. Laurence L. Palmer, Ithaca, New York
Dr. and Mrs. J. Jose Parodiz, Pittsburgh, Pennsylvania
Dr. and Mrs. John W. Parsons, Baltimore, Maryland
Norman D. Paschall, Topeka, Kansas
Mrs. Anthony Perlman, Baltimore, Maryland
Mr. and Mrs. Dan Porter, Ardsley-on-Hudson, New York
Dr. Thomas E. Pulley, Houston, Texas
Mrs. George Raeihle, Elmhurst, New York
Dr. and Mrs. Harald Rehder, Washington, D. C.
Norman J. Reigle, Ann Arbor, Michigan
Mrs. Dorothy Rice, Baltimore, Maryland
Dr. and Mrs. Robert Robertson, Philadelphia
Mr. and Mrs. Ernest J. Roscoe, Chicago
Dr. and Mrs. Joseph Rosewater, Washington, D. C.
Dr. Henry D. Russell, Dover, Massachusetts
Eugene Schmeck, Niagara Falls, New York
General and Mrs. M. H. Silverthorn, Washington, D. C.
Dr. and Mrs. Alan Solem, Chicago
Dr. David H. Stansbery, Columbus, Ohio
W. W. Sutow, M.D., Houston, Texas
Albert Taxson, Bronx, New York
Mrs. Margaret Teare, Buffalo, New York
Mrs. Margaret Teskey, Marinette, Wisconsin
Mrs. Louise Thompson, Arlington, Vermont
Mr. and Mrs. Fred Tobleman, Ocean Grove, New Jersey
Dr. Ruth D. Turner, Cambridge, Massachusetts
Gordon Usticke, St. Croix, Virgin Islands
Joseph Vagvolgyi, Cambridge, Massachusetts
Dr. Henry van der Schalie, Ann Arbor, Michigan
Mrs. Bernard Wichern, Forest Hills, New York
Mrs. Elsie Kane White, Baltimore, Maryland
Dr. Driud Wilson, Plainfield, Virginia
Jack Woodhead, Shawnee, Kansas

On the steps of the U. S. National Museum, Washington, D. C.
AMERICAN MALACOLOGICAL UNION
Twenty-eighth Annual Meeting





1. Allen Brimmer, 2. R. Tucker Abbott, 3. Henry Gordon, 4. James Brodis, 5. Ruth Turner, 6. William J. Clench, 7. Thomas Pulley, 8. William K. Emerson, 9. Paul Basch, 10. Mrs. Carl I. Aslakson, 11. Grace McBride, 12. Jesse Mantel, 13. Mrs. Juan Parodiz, 14. Juan Parodiz, 15. J. Lockwood Chamberlin, 16. Arthur Merrill, 17. Elsa Nyberg, 18. Samuel Fuller, 19. Henry Russell, 20. Mrs. Alger Blaine, 21. Boniface Dazo, 22. Mrs. Walter Carpenter, 23. Herbert Athearn, 24. Donald Kuntz, 25. Unidentified, 25A. Carl I. Aslakson, 26. Mrs. H. B. Baker, 27. Margaret Teare, 28. Chris Bailie, 29. E. Laurence Palmer, 30. Eugene Schmeck, 31. Unidentified, 32. A. Lothrop Luttrell, 33. Mrs. A. Lothrop Luttrell, 34. Alger Blaine, 35. Harvey Meyer, 36. Theodore Endres, 37. Mrs. Louis Mousley, 38. Letha Allen, 39. Katherine Palmer, 40. Lester Allen, 41. Ella H. Oppenheimer, 42. Vincente Conde, 43. Joseph Morrison, 44. Unidentified, 45. Ralph Jackson, 46. Mrs. John Parsons, 47. Mrs. Ralph Jackson, 48. Mrs. Alan Solem, 49. William A. McCarty, 50. Donald Moore, 51. Louis Mousley, 52. Unidentified, 53. Rose Burch, 54. Arthur Clarke, 55. Mary Kline, 56. Virginia Orr, 57. Charlotte Dawley, 58. Juliette Compitello, 59. Louise Travers, 60. Carl Erickson, 61. Mrs. Robert Robertson, 62. Robert Robertson, 63. John W. Parsons, 64. Margaret Teskey, 65. John B. Burch, 66. Ruth Ostheimer, 67. Dorothea Franzen, 68. Mrs. Anthony D'Attilio, 69. Anthony D'Attilio, 70. Mrs. Ernest Roscoe, 71. Wayne Grimm, 72. Unidentified, 73. Leslie Hubricht, 74. Max Matteson, 75. Joseph Rosewater, 76. Mrs. H. B. Bixby, 77. Mrs. Fred Tobelman, 78. Mrs. Bernard Wichern, 79. Richard Foster, 80. Edward Cowles, 81. Mrs. George Raeihle, 82. Dwight W. Taylor, 83. Alan Solem, 84. Unidentified, 85. Donald Stansbery, 86. Ernest Roscoe, 87. Unidentified, 88. George Usticke, 89. Unidentified, 90. Jack Woodhead, 91. Katherine Anderson, 92. Fred Tobelman, 93. Joan Koenig, 94. H. E. Coomans, 95. H. B. Baker, 96. John Q. Burch, 97, Norman Paschall.

AMERICAN MALACOLOGICAL UNION

1960–1961 Financial Report

OPERATING FUNDS

RECEIPTS

Membership dues	$1,743.58
Sale of back numbers, Annual Reports	9.00
Income from 1960 Annual Meeting (Montreal)	38.45
Income from reprints from Annual Report	93.32
TOTAL	$1,884.35
Less 1959–1960 operating loss (caused by late billing for 1960–1961 dues)	–688.45
TOTAL	$1,195.90

EXPENSES

Postage for general purposes	$ 172.17
Printing Annual Reports	862.50
Printing Annual Reports' abstracts	93.32
Stationery	84.68
Notices to council mimeographing	11.75
Meeting advance (AMU-PD only)	25.00
Bank charges	12.35
Miscellaneous	25.90
Secretary's expenses to annual meeting (could not attend)	———
TOTAL	$1,287.67

CURRENT BALANCE

Total expenses for 1960–1961	$1,287.67
Less total income for 1960–1961	1,195.90
Loss for 1960–1961	91.77
Balance of operating funds on June 1, 1960	$ 249.25
Loss for 1960–1961	–91.77
Operating fund balance June 1, 1961	$ 157.48

HOW TO COLLECT SHELLS

INCOME

Profit on old edition as of June 1, 1960	$ 644.77
Sale of remainder of old edition	37.75
Sale of new edition	411.93
Advertising space in new edition	230.00
TOTAL	$1,324.45

EXPENSES

Postage and express	$ 74.50
Printing and preparation of new edition	1,597.40
Miscellaneous	15.75
TOTAL	$1,687.65

CURRENT BALANCE

Total expenses	$1,687.65
Total 1960–1961 income	1,324.45
Current loss	$ 363.20

There are 776 copies on hand with a probable net value (after postage and dealer's discounts) to the AMU of $1,320.

Probable profit when edition exhausted—$950.00

LIFE MEMBERSHIP FUND

Total at start of year	$ 456.33
Special addition from Montreal meeting	300.00
Current balance	$ 756.33

There are currently 12 Life Members. If invested at 4%, the fund would yield sufficient income to cover annual dues at rate of $2.50. At current yield of 2½%, the income of $18.90 would only cover the printing cost of the annual report but not the mailing of it, meeting notices, etc.

ESTIMATED 1961–1962 BUDGET

INCOME (present dues level)

Dues from 750 members (net)	$1,350.00
Other sources	20.00
TOTAL	$1,370.00

EXPENSES

Postage (allowing rate increase)	$ 220.00
Printing Annual Report	850.00
Mimeographing	25.00
Stationery	85.00
Meeting advances	50.00
Secretary to meeting	200.00
Miscellaneous	50.00
TOTAL	$1,480.00

PROBABLE BALANCE

Estimated expenses	$1,480.00
Less estimated income	1,370.00
ESTIMATED 1962 DEFICIT	$ 110.00

CONSTITUTION OF THE AMERICAN MALACOLOGICAL UNION

(Adopted August 16, 1954)

1. This Society shall be called "The American Malacological Union."
2. Its object shall be the promotion of the science of malacology by holding meetings for reading and discussion of papers, and for furthering the interests of students and collectors of shells by facilitating acquaintance and co-operation among the members.
3. Membership is open to persons resident in the Americas and Hawaii who are interested in mollusks. Those not resident in the Americas or Hawaii may become corresponding members. Membership is granted to those making written application to the Secretary-Treasurer. Annual dues are set forth in the bylaws. Life membership may be purchased for the equivalent of twenty years' annual dues, with no further annual dues required. Honorary membership may be bestowed by an unanimous vote of the council upon those who have contributed in an outstanding way to malacology. These memberships may not exceed five living members.
4. The following officers shall be elected annually by ballot: President, Vice-President, Second Vice-President (Chairman, A.M.U.P., elected by the Pacific Division), Secretary-Treasurer, Publications Editor, and four Councillors-at-Large.
5. The government of the Society shall be vested in the Council which shall consist of the officers, honorary and past presidents, and not more than four councillors-at-large. Members of the Council present at any annual meeting shall constitute a quorum. At other times the Council may consider matters pertaining to the Society and vote upon them by mail.
6. The annual meeting shall be held at such time and place as may be fixed by the Council at the preceding annual meeting. Meetings of the Pacific Division may be held as that branch may determine.
7. The officers of the Pacific Division, or any subsequently organized division, shall consist of a Chairman, Vice-Chairman and Secretary-Treasurer. The Executive Council shall consist of these officers and four additional members-at-large who have been past officers. The Division shall choose a representative to serve as a voting member at the annual Council meeting of the Union. The Secretary-Treasurer shall be empowered to accept and transmit A.M.U. dues and a list of members to the A.M.U. Secretary annually.
8. Proposals for the alteration of this Constitution when signed by five members and submitted to the Council shall be acted upon at the next annual meeting. Concurrence of three-fourths of the members casting a ballot by mail, providing that notice of the proposed action has been sent to each voting member at least thirty days before the date of the vote, is necessary for any alteration.
9. The Society may enact bylaws that interpret this Constitution, and such bylaws may be adopted, amended or repealed by a two-thirds majority of those voting at an annual meeting of the Society.

BYLAWS

1. The annual dues shall be three dollars, with any additional member of a family eligible to become a member for annual dues of one dollar.
2. The President shall be empowered to appoint a nominating committee and such other standing and special committees as may be deemed advisable.
3. A nominating committee shall consist of not less than three nor more than five members of the Council, exclusive of existing officers. The duties of this committee shall be to prepare a list of nominations of officers and councillors-at-large for the ensuing year to be elected in accordance with Article 4 of the Constitution, this list to be presented at a business meeting of the Council held during an annual meeting of the American Malacological Union. No member shall be nominated for any office without his or her prior notification and consent.
4. A quorum of five council members is necessary before business may be transacted at any meeting of the Executive Council.

NEWS, NOTES, NOTICES

The 1962 annual meeting of the American Malacological Union will be held in St. Petersburg, Florida, July 31–August 3. The St. Petersburg Shell Club will act as co-host together with the Florida Presbyterian College where meals and housing in air conditioned dormitories will be available for $5.00 per person per day. A bargain, so plan to attend.

* * * *

A majority of the thirty-plus shell clubs in the United States issue a publication for the benefit of club members. It may be but a mimeographed list of members together with their addresses and telephone numbers and perhaps a brief program of events scheduled for the coming year. The Philadelphia Shell Club puts out a sizable annual report which incorporates a roster of members, a review of the past year's program and one or more papers of general interest. "Hawaiian Shell News" is the monthly publication of the Hawaiian Malacological Society and now contains a separate double sheet illustrating and describing the marine shells of Hawaii. "The Veliger" (Northern California Malacozoological Club) announces that is is open to original papers pertaining to any problem concerned with mollusks from the Pacific region. Many of the papers read at the annual meeting of the Pacific Division of the AMU now appear in "Veliger."

A recent development is the quarterly Newsletter which combines information and news of the several California shell clubs. This may be considered a successor to "Minutes of the Conchological Club of Southern California" which over a span of 20 years went to 198 issues.

All club publications when sent to the AMU secretary are carefully preserved against the day when the organization may acquire a library to house its archives. Interest in malacology was never higher and the historian of the future may discover in these informal accountings a gold mine of information.

* * * *

"The 1962 AMU Pacific Division meeting will be held at Asilomar, Pacific Grove, June 27–30, inclusive. The Twenty-first Century, America's space age world's fair is to be held in Seattle next summer. If any of our eastern members plan to attend this fair, we hope they'll drop down to Monterey and attend our meeting.

Incidentally, Monterey was the original capital of Spanish (later Mexican) California; many of the old historical buildings still standing and going strong. I'm giving a sales pitch, in case you hadn't noticed."

(Excerpt from a Westerner's letter to an Easterner)

* * * *

For several years the AMU has been maintaining activities by use of profits from "How to Collect Shells" and by borrowing from next year's income in order to meet current bills.

To build up a reasonable operating fund, it has been found necessary to increase dues one dollar per year for single membership, joint and life memberships to increase accordingly.

It is estimated that in another two years with the dues level so raised, a credit balance can be maintained that will allow expansion of activities and services to members. New publications, newsletters, possible referral services are among the ideas being considered. Your suggestions and comments will be appreciated.

THE EXECUTIVE COUNCIL
American Malacological Union

* * * *

Following announcement of action taken by the Executive Council of the American Malacological Union whereby the bylaws were changed to allow an advance in the over-all dues, the Executive Committee of the Pacific Division proposed in session a measure which was later presented and passed on the floor whereby an additional fifty cents per year will be added to the annual dues of the AMU members living west of the Rocky Mountains. This assessment will be collected by the AMU treasurer and transmitted to the Pacific Division treasurer to be placed in the treasury of that body. It will be used for necessary expenses in connection with the annual meetings of the Pacific Division.

ROBERT W. TALMADGE, Chairman
Pacific Division, American
Malacological Union

In the future, authors desiring reprints of papers appearing in this publication will, upon indicating such desire on the manuscript furnished the secretary, receive page proofs of the article together with reprint order blanks.

AMERICAN MALACOLOGICAL UNION — PACIFIC DIVISION
FOURTEENTH ANNUAL MEETING
UNIVERSITY OF CALIFORNIA AT SANTA BARBARA
Goleta, California
June 28 - July 1, 1961

Registration began Wednesday morning, June 28, 1961. It was capably handled by Mrs. Jean Cate, Mrs. Forrest Poorman, and their able assistants. Each registrant received a box of labelled shells from the Philippines, a handsome gift of the late Dr. Howard R. Hill.

The formal session opened at 2 P.M. with Vice-Chairman Robert R. Talmadge presiding. As the first order of business, Mr. Talmadge requested the Secretary to draft a resolution expressing our deep sense of loss in the untimely death of our Chairman, Dr. Howard Rice Hill, this resolution to be sent with a letter conveying our sincere sympathy to his widow, Mrs. Elizabeth R. Hill, and a copy to be sent to the American Malacological Union.

We were extended a cordial welcome by Dr. Elmer Noble, Vice-Chancellor of the University of California at Santa Barbara, and he invited us to visit the Marine Biology Laboratory. The first session of papers then followed:

THE ABALONE AND AFRICA. Robert R. Talmadge, Willow Creek, California.

(Abstract)

An impromptu discussion of the various species of the Haliotids inhabiting the African coasts supplemented a display of the twelve species and subspecies recognized by the author. The taxonomy, distribution, as well as the possible origin in geological time, with bibliographical data were covered. It was noted that there are few authentic records backed by specimens from the coasts of western Africa.

CHITONS IN COLOR. (illustrated) Allyn G. Smith, California Academy of Sciences, San Francisco, California.

(Abstract)

Brief description of apparatus and methods used in photographing chitons and other small mollusks close-up in color with electronic flash. Illustrated with color slides of equipment used and of various species of chitons from California and the Gulf of California. The apparatus and methods have been developed mainly for rapid photography in the home or laboratory using a standard set-up consisting of an adjustable camera mount on a five-ply board with vertical and horizontal arms that can be quickly clamped in place for ease in focusing. Fine focus is achieved with a special rack-and-pinion head to which the camera is attached. Considerable magnification results from a use of a double set of extension tubes, permitting a lens distance of as little as one and a half to two inches. A proper choice of extension tubes permits enough magnification so that the image of the object to be photographed will completely fill the area of a Kodachrome slide. For best results it is necessary to experiment with the positioning and distance of the flash unit from the object so as to avoid under or overexposure. For higher magnifi-

cations of very small objects, the regular camera lens must be replaced with a special microscope lens. A dead black background has been found to give best results so far, even with dark-colored specimens, with the object to be photographed raised off the background at a distance of from one-half an inch to one inch.

HYBRIDIZATION IN WESTERN AMERICAN HALIOTIDS. R. S. Owen, La Mesa, California.

(Abstract)

For a number of years some California malacologists have suspected that certain unusual specimens of the Haliotids were hybrids. Due to the lack of soft parts, such a hypothesis could not be validated. However, now certain of the hybrid specimens have been taken alive and shell and soft parts may be matched and compared. At the present time, the majority of these have been taken in the Channel Islands off the coast of Southern California. Percentages are still being tabulated, both as to the numbers of adults of both sexes as well as the total number of hybrids. Four distinct hybrids have now been identified with their parent species, and three additional crosses are under study.

Examples of shells and soft parts were placed on display.

REMARKS ON A VARIATION IN *CYPRAEA ANNETTAE* (illustrated) Crawford N. Cate, Los Angeles, California.

(Abstract)

Five specimens of a *Cypraea* species similar to *C. annettae* Dall, 1909 are known from the Gulf of California. The similarities and differences between the two forms were discussed, though no attempt was made to establish the variant as a separate taxon. Additional specimens should be obtained before further work with the group can be completed.

After dinner we were treated to an interesting accounting of the ARIEL expedition. Among the participants of the fruitful cruise had been Dr. Myra Keen, John Q. Burch and Dr. Antonio Garcia Cubas of the University of Mexico.

THE ARIEL EXPEDITION. (movie) Bruce Campbell, M.D.

RARE SHELLS DREDGED ON THE ARIEL EXPEDITION. Donald Shasky, M.D., Glendale, California.

(Abstract)

The Ariel Expedition of 1960 provided private collectors an opportunity to obtain deep water mollusks from the Gulf of California. The *Ariel*, a converted U.S. Navy Mine Sweeper, now a shrimp trawler was outfitted with special small mesh trawl nets, and other gear necessary for such an undertaking. The members of the expedition were made up of twenty-one members and friends of the Conchological Club of Southern California.

The itinerary included Cabo Haro off Guaymas, Sonora, the channel between Loreto, Baja California, and Carmen Island, off Espiritu Santo Island, La Paz Bay, and off Montserrate Island.

Many rarities were taken including: *Anatina anatina, Turcica caffea, Niso splendidula, Colubraria soverbii,* and *Typhis latipennis.* Approximately twenty-five new species were taken, several having already been described in the "Nautilus" and the "Veliger."

Helen DuShane and the Hospitality Committee served punch, coffee and cookies in the lounge of Santa Rosa Hall where visiting went on until a late hour except for those taking the early field trip the next day. The early risers (4:30 A.M.) were led by Dr. Homer P. King on the first field trip of the meeting—to the California State Park at Carpenteria where pholads were abundant.

Formal papers were resumed at 9 A.M. Thursday morning.

SOME EAST COAST MUSEUM COLLECTIONS. E. P. and Elsie M. Chase, San Diego Museum of Natural History.

AN INSTANCE OF REVERSAL OF ASYMMETRY IN A BIVALVE. Dr. Joshua L. Baily, Jr., San Diego Museum of Natural History.

(Abstract)

Instances of reversal of asymmetrical structures in bivalves are much less frequently encountered in bivalves than in gastropods—not only because bivalves exhibit fewer asymmetrical structures but also because the genetic factors that give rise to them are so much more stabilized in the bivalves. The most obvious asymmetrical feature in the bivalves is the hinge, because in it each tooth must interact with a socket in the opposite valve, and if the individual teeth can be recognized it would not be difficult to detect a case of reversal because the teeth and their corresponding sockets would seem to have exchanged valves. And yet so far as I am aware only four instances of hinge reversal have ever been reported, and two of these were noticed by malacologists who warned me personally that the conditions which they observed might be accounted for by some other hypothesis than reversal, and until we know more about the genetics and cytology of bivalves it is best not to be too dogmatic. The other two instances were reported by malacologists who died so long ago that it is not likely that their material is available, so that probably it is not possible to confirm or to disprove their observations.

Another asymmetrical factor occurs in those bivalves which are cemented to a solid object in the substrate. There are two species of Chamidae found on our coast which are affixed normally the one by the right valve, the other by the left. But so far as I know, no instance is known of either species being attached by the valve characteristic of the other. There is, however, a species of *Chama* in the Australian region which is said to be attached by either valve indifferently. It would seem more than reasonable to suppose that this was a mixture of two species but I would not advise anyone to name the second species of the pair until more is known about its genetics and cytology.

Some genera, most typically illustrated by *Macoma,* exhibit a flexure of the posterior end of the shell toward one side. So far as I know, this flexure is always in the same direction—my attention has never been called to a reversed specimen. The same thing is true of the byssal notch in *Pecten*; it is always in the right valve.

In that peculiar genus formerly called *Parallelopipedum* the posterior end of the shell shows a torsion, which again is always in the same direction. I have never seen a reversed specimen, but as the genus is rather rare in collections I have not examined a large quantity and would hesitate to declare dogmatically that there are no reversed individuals; I can say only that I have never seen one.

The only instance of reversal of an asymmetrical structure in a bivalve that has ever come to my attention is in the genus *Arconaia*, a naiad from the rivers of southern China. In this genus the shell shows both flexure and torsion. I have seen one specimen in which flexure and torsion are both reversed, and Simpson in his Catalog of Naiades states that he also has seen a single specimen. These two are not the same, so that at least two reversed specimens are known. Reversal is not complete, however, as the hinge was not reversed.

WHAT IS *ANATINA ANATINA*? (illustrated) Dr. A. Myra Keen, Stanford University, Palo Alto, California.

(Abstract)

Comparing type figures with newly recovered West American specimens of *Anatina* [the *Labiosa* of some authors] indicates that the correct name for the West Coast species of *Anatina*, *s.s.*, is *A. cyprinus* (Wood, 1828), and that the name *A. anatina* (Spengler, 1802) applies instead to an East Coast form. Unless two species prove to be present in the Caribbean area (South Carolina to Brazil), the name *A. anatina* must take priority over *A. lineata* (Say, 1822). Spengler's type locality is "South America," whereas Say's is southeastern United States.

UNDERWATER KODACHROMES. (illustrated) Earl E. Ebert, California State Department of Fish and Game.

(Abstract)

A short talk about the particular project—Ocean Fish Habitat Development—followed by a series of slides taken on artificial reefs and offshore oil platforms. The slides included shots of fish life primarily, with a few on invertebrate organisms.

MINERALOGY, O^{18}/O^{16} RATIOS, STRONTIUM AND MAGNESIUM CONTENTS OF RECENT AND FOSSIL BRACHIOPODS AND THEIR BEARING ON THE HISTORY OF THE OCEANS. (illustrated) Dr. Heinz A. Lowenstam, California Institute of Technology.

(Abstract)

The calcareous shells of recent articulate brachiopods and fossils of the same class dating back to the Mississippian are investigated for their crystal form, O^{18}/O^{16} ratios, and $SrCO_3$ and $MgCO_3$ contents. In the case of recent forms it is shown that temperature affects O^{18}/O^{16} ratios, $SrCO_3$ and $MgCO_3$ contents, and consequently Sr/Ca and Mg/Ca ratios. The $SrCo_3$ and $MgCo_3$ contents are investigated in samples from waters of 35% ± 1.5% salinity over the range of temperatures from 10°C. to 26°C. As is true for the O^{18} concentrations, the uptake of Sr and Mg in the shells is shown to be sensitive

also to changes in the concentrations of the two trace elements in sea water.

The O^{18}/O^{16} ratios and the $SrCO_3$ and $MgCO_3$ contents in fossil samples of Pliocene, Cretaceous, Permian, and Mississippian age were determined. Samples as old as the early Permian have been found in which the relationship of O^{18}/O^{16} ratios and the $SrCO_3$ and $MgCO_3$ contents are similar to recent species. The relation of the O^{18}/O^{16} ratios to the $SrCo_3$ contents in a late Mississippian sample is also similar to that in recent species. These findings make it probable that the original O^{18}/O^{16} ratios and $SrCO_3$ and $MgCO_3$ contents in these fossils are the original ones. In other samples the relations of the relative concentrations of one, two or all three constituents indicate diagenetic alterations by fresh water.

The significance of the chemical similarity of the fossil samples to recent shells is discussed. It is concluded that the results are best explained if it is assumed that the O^{18}, Sr and Mg contents and the Sr/Ca and Mg/Ca ratios in the oceans have remained essentially constant during the last 2.0 to 2.5×10^8 years.

OBSERVATIONS ON THE BREEDING OF CALIFORNIA CHITONS.

Spencer R. Thorpe, Jr., El Cerrito, California.

(Abstract)

The paper dealt with observations of spawning in the laboratory over a 4½ year period. A total of 11 species was included in the observations, including *Mopalia lowei*, *M. imporcata*, and *Placiphorella velata*. It is believed that this represents a first report of spawning observations in these three species.

A very brief résumé was given of larval and post-larval development and behavior for *Mopalia ciliata*, *M. porifera*, and *M. lignosa*, which agrees very nearly with Heath's observations on *Ischnochiton heathiana* (Berry).

Several of Heath's observations or theories concerning spawning have not been confirmed by the writer's observations. For instance it was found that spawning animals may be subjected to various adverse stimuli, as for example being removed from water for 3 to 5 minutes, without in some cases causing a cessation of spawning. Females of *Mopalia lignosa* and other species have been observed to spawn without even the presence of males of their species.

There seems to be some indication that one species (*Mopalia ciliata*) spawns in rhythm with the tidal cycle. This will require more data before being established conclusively.

A FEW PET PEEVES. Dr. S. Stillman Berry, Redlands, California.

Next came a delightful visit to the Santa Barbara Museum of Natural History where Dr. Nelson W. Baker and his assistants gave guided tours of this new and rapidly growing museum.

After a cookout on the beach, there was a visit to the Marine Biology Laboratory, with its various-sized tanks of fish and living marine mollusks which proved fascinating to many.

In the evening we gathered in the lounge for the illustrated talk, "Collecting in Hawaii," by Jean and Crawford Cate, which included slides of some of the shells taken on the Pele Expedition in Hawaii. Slides of AMU-PD members taken at former meetings were shown by various members. Mr. E. P. Baker showed slides of Arizona and New Mexico Indian country.

Before daylight on Friday morning, Dr. King led the "collectors" to Coal Oil Point for the second field trip. He later reported that a total of 30 persons attended, and approximately 30 species were collected, including pholads, acmaea, chitons, olivella, octopi, and other rock and sand dwellers as a result of both trips.

Papers were resumed at 9:30 A.M., with a coffee break and the group picture before lunch.

THE EASTMAN SHORT RUN PROCESS FOR SCIENTIFIC ILLUSTRATION. (illustrated) Allyn G. Smith, California Academy of Sciences, San Francisco, California.

(Abstract)

Review of the development of a new and inexpensive three-color method of printing illustrations for scientific papers being undertaken at the California Academy of Sciences, San Francisco. Illustrated with color slides of the equipment made in the Academy's Shop and with examples of test prints. While this new color printing method is still considered to be in the applied research stage, good progress is being made in producing illustrations of high quality and excellent color fidelity for the purpose intended. The low cost of this printing method, compared with commercial three-color printing, is due to the use of ordinary inexpensive metal multilith masters and a standard multilith (Offset) press equipped with color rolls for printing. An extremely fine engraver's screen is used—266 dots per inch compared with the usual 133 dots per inch used in commercial work. In producing a high-quality result, many technical problems, both photographic and mechanical, are still being solved. Principal among these include the arriving at a proper balance in the density ratios between the three color separation negatives, exact registration of successive color runs, and proper ink distribution during the printing process. The system is designed to use 35 mm. Kodachrome slides only, which must be of high quality and in exact focus to insure the best result in the printed copy.

ODDITIES AMONG THE PELECYPODA. (illustrated) Dr. A. Myra Keen, Stanford University, Palo Alto, California.

(Abstract)

The conventional pelecypod consists of a bivalved shell enclosing soft parts—two adductor muscles; a muscular foot; two siphons; some gills; digestive and reproductive organs; and the mantle, tissue capable of secreting the shell itself.

This pattern has been variously modified. The foot may be reduced to some fibers, as in mussels. The adductor muscles may move to the center of the shell, as in pectens. In *Chlamydoconcha*, the shell has disappeared, and the animal looks like a slug. A shelly chamber for brooding the young is formed in two carditids, *Thecalia* and *Milneria.*

Most aberrant pelecypods were the rudists, clams that flourished during Cretaceous time, 70 to 80 million years ago. The valves were conical and unequal, some as much as two feet long. The shell was built up of complex layers of plates, with hinge teeth projecting into the cavity like pillars.

Largest of all pelecypods is *Tridacna*, a clam that not only farms micro-

scopic algae in its mantle tissues but also has the siphons opposite the hinge in the adult.

Among clams that burrow, three are especially odd. *Teredo* bores into wood, using its valves as rasps. A relative, *Eufistulana*, lives in sand, its gaping valves lying free within a flask-shaped cavity formed by cementing together sand grains. The Clavagellidae (watering-pot shells) are not closely related but also burrow in sand. The shells are vestigial, like two tiny pearls near the closed end. The open tube is apparently a calcified covering for the siphons, and the closed anterior end, with its crown of hollow tubes, seems to be formed by the foot for anchorage.

All of these modifications point up the pliability of what Dr. C. M. Yonge called the mantle-shell. On the whole the Acephala (headless ones)—as early workers called them—have done remarkably well. One wonders how far they might have gone had they kept their heads.

Following luncheon, the following papers were presented:

FEEDING BEHAVIOR OF THE CHITON *PLACIPHORELLA*. (illustrated) James H. McLean, Hopkins Marine Laboratory, Pacific Grove, California.

(Abstract)

Chitons of the genus *Placiphorella* in the family Mopaliidae possess an anterior "head-flap" and "pre-cephalic tentacles," specializations not found in other chitons. In the Monterey Bay area of Central California, *Placiphorella velata* Dall has been found to trap small moving crustaceans by clamping down on them with the head-flap. A carnivorous mode of feeding in species of *Placiphorella* may account for the development of the head-flap and the pre-cephalic tentacles, which are used in manipulation of prey organisms. Carnivorous feeding may also account for the considerable bathymetric range of some species, since plant material may not be available for food at great depths.

REPORT ON EUROPEAN MUSEUMS. John Q. Burch, Los Angeles, California.

(Abstract)

During the months of April, May, and June 1961 it was our pleasure to visit most of the great museums of Europe, meet the curators, and also to visit the fine private collections. After this we visited the antiquarian book dealers in search of rare, out-of-print books. We had fair success with the books, although all dealers told us that fewer of these items are available now than ever before. We travelled without a set schedule, leaving each city as we wished. Without exception we were cordially welcomed, and we feel that we now have warm personal friends from Portugal, Spain, Italy, France, Austria, Germany, Switzerland, Belgium, Holland, Denmark, England, etc. We only hope that we may in a measure return the hospitality shown us in Europe when any of these friends visit California. We returned to Washington in time to attend the meeting of the American Malacological Union, and arrived in California in time to attend the meeting of the AMU, Pacific Division.

THE "SPECIES" OF *MOPALIA CILIATA.* (illustrated) Spencer R. Thorpe, Jr., El Cerrito, California.

(Abstract)

Several writers have indicated the possibility that *Mopalia ciliata* as found on the Pacific Coast may in fact be a complex of more than one species. The present paper presents evidence that this complex along the California and Oregon coasts is made up of not less than four species: *M. ciliata* (Sowerby), *M. swannii* (?Carpenter), *M. lowei* (Pilsbry) and a fourth, as yet undescribed, species.

A careful study of the shell and girdle characteristics reveals four very closely related, but morphologically distinct species. Ecological data, with particular reference to food habits and niche, is presented which serves to substantiate the morphological distinctions. Significant extension of range is shown for *Mopalia swannii* and *M. lowei.*

The presentation included color slides of specimens, and drawings of radular and girdle features.

MOLLUSCAN ECOLOGY APPLIED TO SUBSURFACE STUDIES. Lee Anderson Smith, Stanford University, Palo Alto, California.

(Abstract)

Recent ecologic studies of the benthic faunas of the Texas and Louisiana coasts have been conducted by the Socony Mobil and Sun Oil Company Geologic Research Laboratories. A study of the samples from approximately 7,000 stations is about 85% complete. Distribution patterns of the benthic fauna indicate the primary role of salinity in the inshore environments. In the offshore environments, substrates and water depth (or its effect on temperature stability) combine to control distribution. The distribution of dead as well as live forms was noted. Certain anomalies may give evidence of the Late Pleistocene and Early Recent history of the areas of study. Distribution patterns established in this study have been combined with ecologic information from all available literature. The application of the results in paleoecologic studies of well sections yields considerable information on facies distribution in Tertiary sections. The recognition of transgressive-regressive cycles, represented in well sections, aids in the correlation of subsurface units where conventional electric logs are of limited value. Correlations are possible in areas of very rapid lateral facies change. Thus malacology may help in the search for our petroleum reserves.

LARGE *TEREBRA* IN THE EASTERN PACIFIC. Dr. G. Dallas Hanna and Dr. Leo G. Hertlein, California Academy of Sciences, San Francisco, California.

(Abstract)

Five species of large *Terebra* live in tropical eastern Pacific waters between the Gulf of California and northern Peru. The characteristic features, occurrence and synonymy of each was described; Kodachrome slides illustrated the species discussed.

The general business meeting was called to order by Acting Chairman Robert R. Talmadge at 4 P.M., June 30, 1961. It was moved, seconded and carried that the minutes of the 1960 AMU-PD meeting be accepted as printed in Bulletin No. 27 of the American Malacological Union.

Minutes of the Executive Council meeting were read and approved.

Formal presentation of the Treasurer's Report was dispensed with, as other reports covered the situation.

Elsie M. Chace reported on the National AMU Executive Council meeting of 1960. The need for higher dues was discussed. Mrs. Chace was made a member of the Financial Clarification Committee, and reported its findings.

Rose and John Burch, the 1961 delegates to the national meeting at Washington, D.C., reported that finances were gone into at length; the bulletin and postage alone have cost the American Malacological Union more than $1.56 per member this year, making an increase in dues imperative. Therefore, the annual dues shall be $3.00 per person, with any additional member of a family eligible to become a member for annual dues of $1.00. This change is to become effective June 1, 1962.

It was moved and seconded that the AMU-PD express it thanks to Dr. S. Stillman Berry for the gift of an exhibit case. Motion carried.

It was moved and seconded that the AMU-PD express its gratitude to Mr. Howard Fletcher for the tremendous amount of work he donated in building the six beautiful display cases being used at this meeting. Motion carried unanimously.

The Secretary was instructed to write letters of greeting to the nonagenarians Mr. Andy Sorensen of Pacific Grove, California, and Mr. Ernest Wilcox, 390 Arbutus St., Morro Bay, California, who are no longer able to attend our meetings.

Reasons for the policy of selecting Asilomar and the Goleta campus of the University of California as more or less permanent meeting places for Pacific Division meetings were discussed. It is now necessary to make our arrangements almost two years in advance, due to summer sessions at the universities. The storage of our 12 exhibit cases (six in the north, and six in the south) at no additional cost, the relatively economical cost to us as compared with many convention sites, ample parking space, the fine climate and easy access to the beaches were all considerations strongly in favor of these two meeting places.

Dr. Rudolf Stohler moved that a local assessment of fifty cents per person per year be levied on those persons (members of AMU) living west of the Rocky Mountains, to be collected by the Treasurer of the AMU and to be transmitted to the Pacific Division Treasurer as soon as possible; motion seconded by Crawford N. Cate. The local assessment motion carried. This fifty cents assessment will not be made until June, 1962.

Rose Burch told us that the cost of life memberships in the AMU is going up with the increase in regular dues. A life membership is now $40.00; next year it will cost $60.00.

A motion was made, seconded and carried that the AMU-PD Secretary send a letter expressing our thanks to Mr. H. Harbeson and the staff of the University of California at Santa Barbara for their help in making our meeting both pleasant and successful.

The Nominating Committee (Rudolf Stohler, Chairman; Dr. Leo G. Hertlein, Allyn G. Smith) proposed the following slate of officers to serve in 1961–62: Chairman, Robert R. Talmadge; Vice-Chairman, Crawford N.

Cate; Secretary, Lucille Zellers; Treasurer, Mary E. Long. There being no further nominations it was moved and seconded that we elect these officers. The motion was carried by a unanimous vote.

A motion was made, seconded, and carried unanimously for a rising vote of thanks to Eva Maye Fletcher for her fine work on the memorial tribute to Dr. Howard R. Hill, a copy of which had been placed in each program.

Mr. Talmadge expressed his very great thanks to Mr. and Mrs. Crawford Cate for the excellent help they gave him in arranging this meeting. A rising vote of thanks was then given Bob Talmadge for his fine job as Acting Chairman on such short notice.

Friday evening we drove into Santa Barbara for our banquet. The tables were cleverly decorated with "Tidepools" for centerpieces, and at each place a turtle placecard and two *Pododesmus cepio* Gray, the latter a gift from Mr. John Strohbeen who had collected them at Santa Cruz.

Chairman Talmadge again thanked all the committees for a fine job in keeping this convention up to the high standards previously set. He introduced Mr. and Mrs. Cate, who had been so especially helpful to him and to the late Dr. Hill.

After a delicious dinner, we thoroughly enjoyed a travelogue by Dr. Cadet Hand of the University of California at Berkeley. Dr. Hand recently spent a sabbatical year in Australia and New Zealand, and we were privileged to see these interesting countries through his beautiful slides.

To conclude our fine evening, the "Tidepools" were given as door prizes.

At the opening of the Saturday morning session, Mr. Talmadge announced that he had received an anonymous note enclosing a fifty-dollar bill for the use of the AMU-PD. After heartily thanking our benefactor, papers were resumed.

THE USES OF SHELLS BY INDIANS. (illustrated) E. P. Baker, Downey, California.

WINTER COLLECTING AT MAZATLAN. (illustrated) Dr. Homer P. King, Los Angeles, California.

(Abstract)

Mazatlan, Sinaloa, Mexico is barely within the tropics. It is situated at the mouth of the Gulf of California. Mazatlan is about 1,300 miles southeast of Los Angeles. In making the trip by car one is never off paved roads. Accommodations are excellent at Caborca, Hermosillo, Guaymas and at any of the large cities below Guaymas. Driving time is from two and a half to three days.

The best time to collect is during the fall and winter months, the cool dry season. During the rainy season it is not only hot and humid but one is plagued by insects and severe storms at times. Mazatlan itself is only a few feet above sea level.

During a trip made in December and January, 1961, members of the Conchological Club of Southern California and the Pacific Shell Club collected on rocky shores, in protected coves, on bold headlands, on offshore islands, in high and low tidepools, in mangrove swamps and at the outfall of the harbor dredge pipe. They also trapped, went out on a shrimp boat

and dredged offshore from a small boat. Mud-flat collecting and lantern-light collecting were the only two kinds missed; there was not enough of sandy beach collecting, though there was some. Due to the prevailing tides, all collecting was done during the daylight hours. Each of the several types of collecting was discussed briefly, and the beaches listed. The problems involved in dredging, trawling and trapping were discussed. The talk was illustrated with color slides.

THE PLANNING OF MARINE BIOLOGY HALL, LOS ANGELES COUNTY MUSEUM. George P. Kanakoff, Curator, L. A. County Museum, Los Angeles.

BIOLOGICAL EXPLORATION AT THE HEAD OF THE CARMEL SUBMARINE CANYON. (illustrated) Verne O. Peckham and James H. McLean, Hopkins Marine Laboratory, Pacific Grove, California.

(Abstract)

Since the fall of 1960 a total of 19 collecting dives have been made at the head of the Carmel Submarine Canyon, located offshore at San Jose Creek Beach, near Carmel, California. An ecological survey, with lists of all species of invertebrates and algae which we have been able to identify, is in preparation. At present we have approximately 290 species, including 122 species of mollusks.

The area covered is about an acre of sloping granite at depths of 60 to 200 feet on the north wall of the canyon. In depths less than 70 feet, the giant kelp *Macrocystis pyrifera* produces a dense surface canopy. Below the canopy a rich assemblage of invetebrate species is found on the sides of boulders, while red algae and encrusting *Lithothamnion* are found on top surfaces of boulders. Gently sloping sandy areas, held in place by the burrowing tube worm, *Diopatra ornata*, occur at the rim of the more steeply sloping canyon walls.

At depths of 70 to 100 feet a transition to a deep-water assemblage takes place. Most of the organisms are unfamiliar to intertidal collectors. The gorgonian *Psammogorgia arbuscula*, two corals, four starfish and many mollusks, including *Hemitoma bella*, *Haliotis kamtschatkana* and *Acmaea funiculata* appear. On vertical walls, thick masses of sponges and bryozoans adhere to tubes of the polychaete *Phyllochaetopterus prolifica*.

Turbulence is minimal in this deeper zone and fine sediments accumulate on surface irregularities of the rock walls. Artificial light is required to see the brilliant red and orange colors of many sponges and other animals. Between 100 and 200 feet the fauna appears to change very little, suggesting that many of these deep-water forms extend to greater depths.

After the final paper there was a short special business meeting. It was announced that a projection lens was missing from a machine assigned to us. It was moved by Dr. Rudolf Stohler and seconded by Allyn G. Smith that we reimburse the University for this lens in the event it was not found. Motion carried. In the discussion it was pointed out that there was a need for liability insurance to protect the organization in such cases. The lens was later found.

Dr. A. Myra Keen, the President of the AMU when the Pacific Division was started, passed the gavel to our new Chairman, and the meeting was declared adjourned.

Respectfully submitted,
Dorothy Brown, Secretary
American Malacological Union,
Pacific Division

July 25, 1961

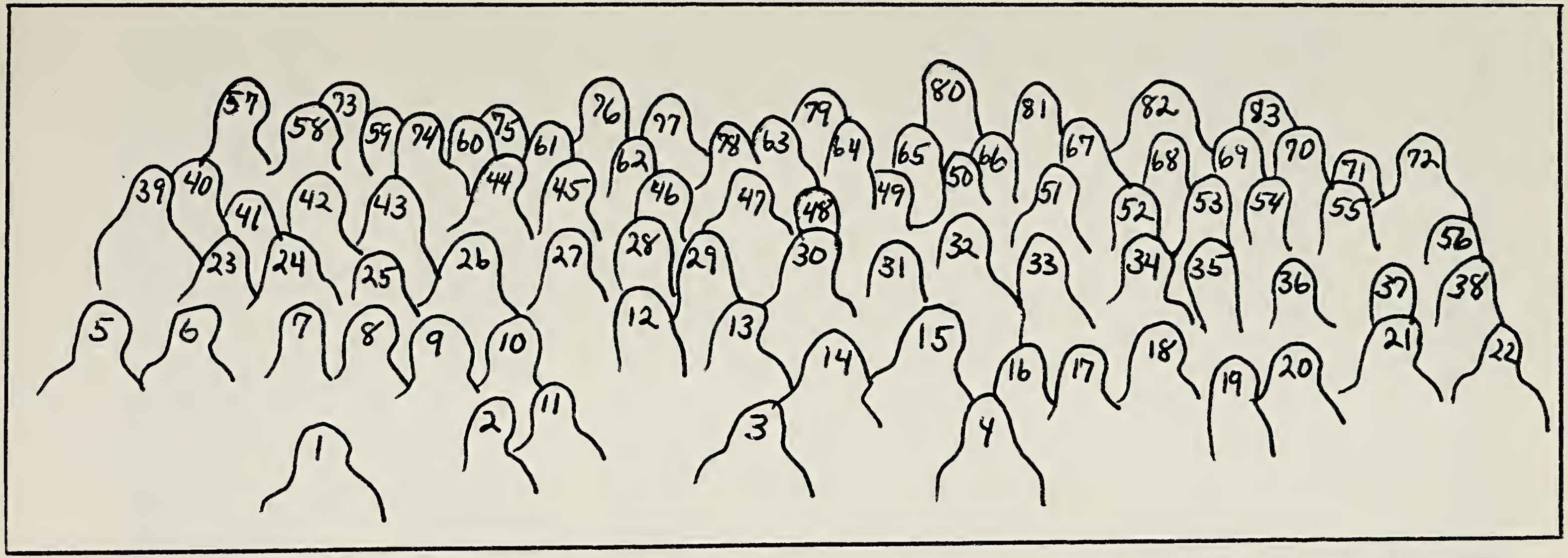
ATTENDED THE AMUPD MEETING

Mrs. Robert Alexander
Dr. and Mrs. Joshua L. Baily, Jr.
Mr. and Mrs. E. P. Baker
Dr. Nelson Baker
Mrs. R. G. Beck
Glen Bickford
Mr. and Mrs. Ford Bratcher
Mrs. Dorothy Brown
Mr. and Mrs. John Q. Burch
Dr. Bruce Campbell
Mr. and Mrs. Crawford N. Cate
Mr. and Mrs. E. P. Chace
Eugene Coan
Mrs. Thelma Crow
Miss Margaret Cunningham
Miss Joan Demond
Mrs. Henrietta DeVore
Mr. and Mrs. Joseph DuShane
Miss Renee DuShane
Earl E. Ebert
Mr. and Mrs. W. J. Erich
Miss Bessie Falconer
Miss Marie Fay
Miss Bertha Finke
Mr. and Mrs. Howard Fletcher
Miss Edna Fletcher
Mrs. Helen Folz
Mr. and Mrs. Mead French
Dr. Fritz Haas
Mr. and Mrs. Edgar Hailey
Mrs. Frances Hamaker
Dr. Cadet Hand
Master Richard Harris
Miss Susan Harris
Miss Elizabeth Ann Haskin
Dr. Leo G. Hertlein
Merton Hinshaw
Richard Hitt
Eric Hochberg
Alan Hoffman

Mrs. Faye Howard
Miss Camilla Ingram
Mrs. Eleanor Ingram
Ralph Jones
Mr. and Mrs. George P. Kanakoff
Mrs. Mary Keen
Dr. Myra Keen
Dr. and Mrs. Homer King
Mrs. Florence LaFayette
Pat LaFollette
Mrs. Mary Larson
Mrs. Rhoda Leslie
Miss Mary Long
Dr. Heinz A Lowenstam
Mr. and Mrs. Gordon Matheson
Donald McIntyre
James McLean
Mr. and Mrs. Helmut Meier
Roy Morrison
Jens Ostergaard
Buzz Owen
Verne Peckham
Mr. and Mrs. Roy Poorman
Captain R. D. Risser
Frank Russ
John Saxby
Dr. and Mrs. Donald Shasky
Miss Charlotte Shuman
Miss Katherine Shuman
Allyn G. Smith
Lee Anderson Smith
Gale G. Sphon, Jr.
Miss Mabel Sterns
James Stewart
Dr. Rudolf Stohler
Mr. and Mrs. John Strohbeen
Robert Talmadge
Robert Talmadge, Jr.
Mrs. Ruth Tarling
Miss Lynne Taylor
Mrs. Wyllie Taylor
Mr. and Mrs. Perry C. Taylor
Mr. Spencer Thrope, Jr.
Miss Joan Troesch
Mr. and Mrs. Harry Turver
Mrs. Jean Wilkins
Miss Evelyn Wilson
Miss Phyllis Wilson
Mrs. Fay Wolfson
Alfred Zeisler

AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION
14th Annual Conference, 1961
Goleta, California

Photo by GILBERTS of Goleta, Calif.



1. George Kanakoff, 2. Mead French, 3. Emery P. Chace, 4. Edwin P. Baker, 5. Mary Turver, 6. Eva Mae Fletcher, 7. Camilla Ingram, 8. Eleanor Ingram, 9. Susan Harris, 10. Ruthe Kanakoff, 11. Richard Harris, 12. S. Stillman Berry, 13. Robert Talmadge, 14. Jean Cate, 15. Dorothy Brown, 16. Evelyn Meier, 17. Grace Alexander, 18. Rudolf Stohler, 19. Wyllie Taylor, 20. Irene Baker, 21. Elsie Chace, 22. Phyllis Wilson, 23. Frances Hamaker, 24. Edna Fletcher, 25. Evelyn Wilson, 26. Mary Long, 27. Rohda Leslie, 28. Joan Demond, 29. Katherine Shuman, 30. Allyn Smith, 31. Cornelia King, 32. Cadet Hand, 33. Joan Troesch, 34. Pat LaFollette, 35. Ruth Tarling, 36. Faye Howard, 37. Lynne Taylor, 38. Charlotte Shuman, 39. Mrs. Perry Taylor, 40. Bill Erich, 42. Ruth Baily, 43. Mary Larson, 44. Frank Russ, 45. Jens Ostergaard, 46. Rose Burch, 47. Fritz Haas, 48. Marie Fay, 49. Myrtle Beck, 50. Helmut Meier, 51. Homer King, 52. Florence LaFayette, 53. Jean Wilkins, 54. Bertha Finke, 55. Henrietta DeVore, 56. Ruth French, 57. Merton Hinshaw, 58. Perry Taylor, 59. R. D. Risser, 60. Ralph Jones, 61. Mabel Sterns, 62. Renne DuShane, 63. Lee Smith, 64. James McLean, 65. Harry Turver, 66. Carolyn Strohbeen, 67. Leo Hertlein, 68. John Q. Burch, 69. Crawford Cate, 70. Eugene Coan, 71. Roy Morrison, 72. Bob Talmadge, Jr., 73. John Strohbeen, 74. Helen DuShane, 75. Helen Folz, 76. Joe DuShane, 77. Myra Keen, 78. Mary Keen, 79. Gale Spohn, 80. Josh Baily, 81. Howard Fletcher, 82. Gordon Matheson, 83. Erica Matheson.

BYLAWS OF THE AMERICAN MALACOLOGICAL UNION, PACIFIC DIVISION

(*Adopted June 28, 1958*)

ARTICLE I

Section 1—This organization shall be known as the American Malacological Union, Pacific Division, and as such it is an integral and inseparable part of the parent organization, the American Malacological Union.

Section 2—The purpose in forming the Division is to give members of the American Malacological Union living west of the Rocky Mountains in the Pacific Coast region opportunity to attend regional annual meetings.

Section 3—No provision in these Bylaws shall be interpreted as superseding or abridging provisions in the Constitution and Bylaws of the national organization.

ARTICLE II

Section 1—The administration of the affairs of the Division shall be vested in an Executive Board, which shall consist of the currently elected officers and the three most recent past Chairmen of the Pacific Division. Its Chairman shall be the current Division Chairman.

(1) The terms of members of the Board shall begin one month after the close of the annual meeting.

(2) Vacancies on the Board may be filled by appointment of the Chairman, preferably from among previous Chairmen.

(3) No person shall be a Board member who has not been a member of the American Malacological Union for at least two years.

Section 2—The Board shall meet annually during a Pacific Division annual meeting, prior to the regular business meeting, and at such other times as agreed upon by the majority of the Board. Insofar as possible, matters requiring action between regular annual meetings shall be handled through a poll of the Board by the Chairman.

Section 3—The time and the place of the Annual Meeting shall be decided upon by the Board.

Section 4—The Board shall pass on all matters involving policy; but its decisions are subject to ratification by a majority vote of the Division membership attending the annual meeting. The Board shall act in an advisory capacity in all other matters brought to it by the Chairman.

Section 5—The officers of the Division shall be a Chairman, a Vice-Chairman, a Secretary, and a Treasurer.

(1) The terms of office shall normally be one year, beginning one month after their election at any annual meeting.

(2) Whenever an annual meeting of the national organization is held on the Pacific Coast, the currently elected Division officers shall serve for a second year without re-election.

Section 6—The officers shall perform the usual duties of such offices.

(1) The Chairman shall preside at annual meetings and be generally responsible for the activities of the Pacific Division. He may delegate responsibility through the appointment of such committees as he deems desirable. He shall, as Second Vice-President of the national organization,

act as liaison with the officers and the Executive Council of the parent body, either personally or through the Division Secretary.

(2) The Vice-Chairman shall act for the Chairman if the latter is unable to serve and shall assist the Chairman on request.

(3) The Secretary shall take all minutes of business and board meetings, transcribe them as promptly as possible, and transmit a copy to the Chairman for review. The Secretary shall also take such notes during annual meetings as may be appropriate, obtain abstracts of papers presented at annual meetings, prepare an annual report of the Pacific Division meeting, and submit this report to the Chairman for review. Upon approval, this report shall be transmitted by the Secretary to the national Secretary-Treasurer for inclusion in the AMU annual report. The Secretary shall also handle all necessary correspondence, as directed by the Chairman or as otherwise required, keep the other members of the Executive Board informed on matters that should concern them, and maintain the records of the Division.

(4) The Treasurer shall be responsible for handling and recording all funds of the Pacific Division, including the per capita dues allowance from the Secretary-Treasurer of the parent organization. He shall receive such national AMU dues from new or regular members as may come to him and shall forward them promptly to the AMU Secretary-Treasurer. Within one month after the annual meeting, he shall submit an annual report to the newly elected Chairman; this report is to be presented for approval before the next Executive Board meeting and the annual business meeting. He shall maintain an up-to-date list of the AMU members living west of the Rocky Mountains who are in good standing and shall keep the Secretary informed of the current status of this list.

SECTION 7—Officer candidates shall be nominated by a Nominations Committee of three appointed by the Chairman from the list of past Chairmen of the Pacific Division. The Committee shall present its slate of nominations at the annual business meeting. If there is more than one candidate for an office, a straight majority vote on written ballot will determine election.

(1) No candidates shall be nominated without prior consultation as to their willingness to serve.

(2) Membership in good standing in the American Malacological Union for a period of not less than two immediately prior years and residence west of the Rocky Mountains shall be required for eligibility as officer candidates.

ARTICLE III

A proposal to amend or repeal any Bylaw must bear the signatures of at least ten AMU members of the Pacific Division in good standing. The signed proposal must be submitted to the Executive Board at least two months before the annual meeting for verification of its constitutionality. It may be discussed at the subsequent annual meeting, but its adoption requires a two-thirds majority affirmative vote of the members present at the annual meeting the next year following its proposal.

AMU MEMBER CLUBS

GREATER ST. LOUIS SHELL CLUB, Mildred M. Novak, Recording Secretary: At the April meeting the following officers were elected to serve during the 1961–62 season:

President, George C. Henderson; Vice-President, Flynn Ford; Historian, Mrs. Robert Oswald; Corresponding Secretary, Mrs. Winton Barker; Recording Secretary and Treasurer, Mrs. Charles Novak.

Our meetings are held once each month, usually at a member's home, and our programs are varied, interesting, and instructive.

One of the highlights of the season was an auction of shells and shell novelties donated by members; the $232 raised was given to the St. Louis Academy of Science.

Several members have given talks on shells to various groups, clubs, and organizations. Others have had shells on public exhibit on one occasion or another. As we are indeed an inland club our membership is small, but steadily increasing, and interest is in shells from all over the world. We regret that none of us attended the AMU meeting this year, but it is the desire of us all to attend one of the national meetings some day. Our regular delegates, Mrs. Charles Lewis and her sister, Miss Estelle Windhorst, were unable to attend due to Mrs. Lewis' having undergone major surgery, but we are happy that she is now feeling well again.

A number of new ideas and plans are under way and we look forward to a wonderful, exciting, and interesting 1961–62 season.

SOUTH FLORIDA SHELL CLUB, Elizabeth B. DuPuis, Secretary: We meet every fourth Monday at 8:00 P.M. in the Museum of Science and Natural History, Miami, Florida. EVERYBODY WELCOME!

Our club is just completing the first year which has been devoted to organization, finding a meeting place and in getting acquainted. We have become a cooperating member of the Museum which also is new, and have pledged our support to a wonderful project—to help the Museum acquire and arrange a suitable collection of South Florida and Caribbean shells, both recent and fossil.

We try to plan a field trip for every month. We hope to arrange more activities and through them and publicity to interest many more shellers in club membership. Visitors are most welcome, especially those who will volunteer to add to our programs.

Signed: Muriel Hunter, President, Elizabeth DuPuis, Secretary.

SAN ANTONIO SHELL CLUB, Laura Gilbert, Editor: Our club has met for the past year on the fourth Monday evening at the Laurel Heights Methodist Church. In addition to regular business, shell games were played, shells brought to be traded, some (from Hawaii) sold. Members helped arrange shell exhibits for the Whitte Museum. The club was invited by the Aquarium Club to share in their viewing of a fascinating film, "The Great Barrier Reef." At one meeting beach wash was examined for shells. An exhibit of prize shells of the members was entered in the Fort Sam

Houston Hobby Show and was awarded a blue ribbon. This exhibit included the salt water aquarium of a member, complete with live sea horses and hermit crabs in *Murex* shells.

A talk in two parts and illustrated by movies was given by the C. Camden Ernsts on their world shell collecting trip. Shells are given as door prizes at each meeting. Reports of field trips and articles on shells are published in our quarterly magazine, "Texas Shell News."

Officers for 1960–61: President, Duane E. Mellor; Vice-President, Edna Poer; Secretary, Barbara Halbardier; Treasurer, Cleta Mehavier; Editor, Laura Gilbert.

COASTAL BEND SHELL CLUB, Adelaide B. Johnstone, Recording Secretary: We meet on the fourth Tuesday at 8:00 P.M. at the Corpus Christi (Texas) Museum and our officers are: President, Mrs. C. G. Bray; Vice-President, Don Baker; Treasurer, Mrs. Fred Jones; Recording Secretary, Mrs. D. D. Johnstone; Corresponding Secretary, Mrs. Robert Wasson.

Program for 1960–61: "Shelling at Campeche and on the West Coast of Mexico," Mrs. Robert Wasson; "Conservation," Mrs. Joseph O'Brien; "Coelenterates" and "Sea Hares and Nudibranchs" (in two parts) Howard Lee; "History of Padre Island," Cash Asher; "Flower Garden Coral Reef," Dr. Thomas Pulley; "Shelling in Florida," Mrs. Fred Speers; "Shells In Literature," Mrs. Douglas Johnstone; "Coelentrates, Starfishes and Related Animals," Mrs. Joseph O'Brien; "Experiments with *Gambusia*," Mr. Albert Heine.

In September a workshop is scheduled to prepare specimen collections of Mollusca of the Texas Gulf to be presented to 40 Texas museums at their State Conference in November. Our members also take an active part in the program of the Corpus Christi Museum, teaching school classes and after-school clubs as well as running a summer shell club for children. Field trips, both for the club and for classes, are important activities.

GREATER BALTIMORE SHELL CLUB, Carole Ann Supp, Secretary-Treasurer: The Greater Baltimore Shell Club in its fifth year of organization has about thirty members. Most of the meetings were held at the Natural History Society of Maryland with whom it is associated. The Club meets bi-monthly on the last Tuesday of the month. During the intervals between meetings, members associated with the Department of Molluscs gather informally and continue the organization of the shell collection of the Natural History Society.

This year the Club has been primarily concerned with the identifying, sorting, and organizing of the Society's shell collection. The principal guest speaker this year was Miss Virginia Orr of the staff of the Academy of Natural Sciences of Philadelphia, who lectured on "Reefs, Flats, and High Hills," telling of collecting experiences in Australia and nearby islands. The Greater Baltimore Shell Club was honored to be associate co-sponsor with the Washington Shell Club for the annual meeting of the American Malacological Union at Washington, D.C.

There have been no group field trips this year, but individual members have made collecting trips to points of interest. Dr. and Mrs. John Parsons have recently been collecting at Aruba, Dutch West Indies and Miss Martha

Hunt has been collecting in Tahiti. This summer a trip is planned to the Calvert Cliffs to collect Miocene fossils.

The Secretary-Treasurer of the Greater Baltimore Shell Club for the year 1961 is Miss Carole Ann Supp, 3937 Lowndes Avenue, Baltimore 18, Maryland.

NORTHWEST SHELL CLUB, Elsie Marshall, Corresponding Secretary: The Northwest Shell Club was formed September 18, 1960, with 16 people attending. Meetings have been held every 2nd month on the 2nd Sunday of the month. Though young, we've grown and now have 122 members scattered throughout the Northwest and beyond. Attendance at meetings now averages between 40 and 50.

At meetings we visited the Point Defiance Salt Water Aquarium in Tacoma, Washington; viewed various films on marine life; held shell auctions; and studied exhibits of local shells.

Thanks to the hard work of our President, Tom Rice, as of January 1961 we have a Club paper, averaging 10 pages which is published every other month. It includes Club news, general information on how to exchange shells, etc., trips taken by members, biographies of malacologists, publications on shells and where to obtain them, and much other useful and interesting information.

A beautiful membership card was made by members Colleen Doyle and W. Jackson Sallee—a color photograph of *Ceratostoma foliatum* (Gmelin).

A week-long Club-sponsored shell collecting trip to San Juan Island was well attended by 50 members. Although the traps yielded nothing and the dredge was carried away by a "sea monster" (a large halibut), everyone found lots of shells. The barbecued salmon was delicious and the weather was delightful. Bill Old from the American Museum of Natural History, New York, took back a pretty good local collection for the museum. He was made an honorary member of the Club on the trip. Members of the Club visited the University of Washington's Friday Harbor Marine Laboratories while on the Island.

A family picnic meeting was held at the beach home of Mrs. A. R. Wingard at Gig Harbor in late July. Clams and salmon were steamed in a huge pit and it was enjoyed by all. The chiton display (for which Mrs. W. is noted) was gorgeous.

It has been a full year for the Northwest Shell Club collectors and next year looks bigger. The Club has been asked to prepare a permanent exhibit of local shells for the Natural History Wing now being built for the Museum of History and Industry in Seattle. A meeting is scheduled for Victoria, British Columbia next spring. We are also planning a Shell Fair in connection with our Century 21 World's Fair being held in Seattle from April to October 1962. Lots of work and lots of fun ahead!

Officers for the year have been: President, Tom Rice; Vice-President, Phil Spicer; Secretary, Joan Shields; Corresponding Secretary, Elsie Marshall; Treasurer, Col. Harvey Johnson.

THE PHILADELPHIA SHELL CLUB, Ronald D. Lowden, Jr., Secretary: The sixth year of the club was an active one with several distinguished speakers: Dr. Edward Bousfield of Canada (Marine Mollusks of the Maritime Provinces), Dr. Kawaguti of Japan (*Tamanovalva*—the Bivalved Gastropod), Dr. Horace G. Richards (Evolution of the Invertebrates), Dr. Frederick Aldrich (Molluscan Dilemmas of the Estuarine World), Dr. William Dodd (Expedition to Madagascar), and Dr. R. Tucker Abbott (Strombidae Conchs of the World). We also had a donation auction (club netted $276), an exchange night, and a Christmas party. There were monthly reviews of the literature, "Shell-of-the-Month" talks, and pre-meeting classes in Conchology. The club scrapbook was re-vitalized and two volumes bound.

Membership for 1961 was 191. Officers elected for the 1961–62 season: President, Leonard Richardson; Vice-President, Robert J. L. Wagner; Secretary-Treasurer, Ronald D. Lowden, Jr.; Historian, Robert Robertson; Editor of the *Proceedings,* R. Tucker Abbott; Councillors, Ruth Ostheimer, Warner R. Over, John D. Parker, Charles B. Wurtz. Meetings are held at 8:00 P.M., second Thursday of the month (Sept.–May) at the Academy of Natural Sciences of Philadelphia. Back numbers of the *Proceedings* are obtainable at $1.00 per copy, plus postage.

THE HAWAIIAN MALACOLOGICAL SOCIETY, Elizabeth Harrison, Corresponding Secretary: Our Society meets at 7:30 P.M. the first Wednesday of each month at the Waikiki Aquarium. Our officers: President, Cliff Weaver; Vice-President, James Andrus; Treasurer, Mrs. James Andrus; Assistant Treasurer, Donald von Geldren; Recording Secretary, Mrs. Robert O'Brien (filling out the term of Mrs. Eunice Baker); Corresponding Secretary, Mrs. Elizabeth Harrison.

After many set-backs, 1961 saw the second edition of our "Helpful Hints for Shell Hunters" come off the press and ready for orders. A small group of volunteers finished the Herculean task of recutting and running stencils of back issues of "Hawaiian Shell News" so that complete files are now available. And with our fourth annual Shell Fair gone but far from forgotten, plans are afoot for number five next summer.

NORTH CAROLINA SHELL CLUB, Hugh J. Porter, Secretary: The North Carolina Shell Club celebrated its fourth birthday on March, 1961. In these four years its membership has grown from 29 to just over 200 junior and senior members. The membership includes not only professional malacologists but also those who find that collecting mollusks is an interesting and educational hobby; the latter group far outnumber the former group. Also noteworthy is the fact that the club's membership is not from one small area but from all parts of the state.

Since the last American Malacological Union report, quarterly meetings have been held at Women's College of the University of North Carolina in Greensboro, N. C.; at the University of North Carolina in Chapel Hill, N. C.; and at the University of North Carolina's Institute of Fisheries Research in Morehead City, N. C. During the meetings, Dr. Charlotte Dawley, Department of Biology in Women's College, spoke on Land Snails and Dr. John Ferguson, Chairman of the Department of Physiology in the University of North Carolina, spoke on beachcombing in South Africa. Workshops on the identification of the Veneracea, Cowries and related Cypraeacea, and Tellinacea were directed by Dr. John Ferguson and Dr. B. W. Fassett of Durham, N. C. Shell collections of members were on exhibit at all meetings. While meeting in the Morehead City area, about 30 members made a collecting trip by boat to Cape Lookout. For a change the trip was spared of bad weather and shell collecting was good.

This year the club participated with an exhibit of shells from North Carolina at the Fourth Annual Hobby Show sponsored by the Association for Aging and Community Relationships of Chapel Hill, North Carolina. This show was held at the University of North Carolina's Morehead Planetarium in Chapel Hill, N. C.

Officers for 1961 are: President, Mr. James E. Wadsworth; Vice-President, Dr. John Ferguson; Secretary-Treasurer, Mr. Hugh J. Porter; members of Executive Committee, Mrs. K. L. Johnson and Mr. Harry T. Davis.

NAPLES SHELL CLUB, Beatrice M. Cole, President: Our club has another successful year behind it, the annual Shell Show being the outstanding event. As is our meetings, the show was held in the Women's Club Auditorium and was attended by thousands of persons from all over the country. Shell of the Show award went to Captain W. E. Powlus for his fine *Voluta clenchina robusta*, dredged from the Gulf of Mexico. The judges (Mr. and Mrs. Alger P. Blaine, Mr. and Mrs. Carl Chandler) did a fine job, their work made difficult by the many outstanding entries. We are hard at work, endeavoring to make the 1962 show (February 22–25) an even greater success.

In January we were entertained by an interesting account by Mrs. Lucia King of her shelling activities in Guaymas, Mexico. In May the club donated a collection of Florida shells for permanent display in the new offices of the Naples Chamber of Commerce. Other meetings were devoted to the study of sea life, Kathleen Y. Johnstone's "Sea Treasure" being our guide.

Present officers are: President, Beatrice M. Cole; Secretary, Mary Hartman; Treasurer, Ellen Wilson. Officers and members alike extend a cordial invitation to all shell enthusiasts to visit us when in Florida.

NORTHERN CALIFORNIA MALACOZOOLOGICAL CLUB, Mary R. Larson, Secretary: Meetings every month at 8:00 P.M. in room 4005 Life Sciences Building, University of California, Berkeley, California. We started the year with Joe Rosman as our president, but after a fine start the office was vacated in April when the Rosmans left on an extended trip to Europe and the Near East. We are finishing out the year with the following officers: President, Dr. Cadet Hand; Vice-President, Lucille Zellers; Corresponding Secretary, Barbara Chapman; Recording Secretary, Mary Larson; Treasurer, Phoebe Balch; Executive Secretary, Dr. Rudolf Stohler.

Our 79 members come from a radius of 75 miles to enjoy our three-part meetings. The main speaker of the evening (often a guest) opens with what is always an interesting topic, usually illustrated. We have learned much about California Indian shell mounds, been told of molluscan research in the laboratory of Dr. Marchus at the University of Sao Paulo, Brazil, shared field trips for collecting and research along the Gulf of California, and enjoyed special exhibits of shells. This last takes place during intermission, which is followed by a business meeting following which we enjoy short talks by our fellow members on a wide variety of subjects. Guests are always welcome .

"The Veliger," our scientific quarterly, coupled with "West Coast Shell Club News," links us with our neighboring California shell clubs. Interests of our members range from art through "just collecting" to scientific research in many fields.

GULF COAST SHELL CLUB, Anna Mae Bishop, Secretary-Treasurer: The Gulf Coast Shell Club (of Beaumont, Texas) was organized in March, 1961 with twenty charter members, now have over thirty members. We meet on the first Monday of each month and our officers are: President, Mrs. Harry Kingston; Vice-President, Mrs. Howard Varnado; Secretary-Treasurer, Mrs. J. Brooks Bishop, Jr.; Historian, Larry Scott.

We have viewed several private collections, reviewed literature on mollusks, identified and cleaned shells and held a variety of discussions. We have had two field trips to the beach this past summer, one in June to the Gulfside home of Mrs. J. B. Cothharp at Coplen Beach and the second to the vacation cottage of Mr. and Mrs. J. B. Bishop, Jr., at Blue Water Beach. (Both of these beaches are located on the Bolivar Peninsula).

A rare shell is donated by our president each meeting as an attendance prize.

One of our young members, twelve year old Harry Lea Kingston, received a Grand Prize Rosette Award at the hobby show of the South Texas State Fair last year for his worldwide collection of over 3,000 shells. Our club contains many young school children who are very much interested in the science of shells. We are proud to be a part of their education. We have many plans for the coming year including displays for the South Texas State Fair, a shell fair and shell exchange.

SOUTH CAROLINA'S GRAND STRAND SHELL CLUB, Pat Kugler, Secretary-Treasurer: Our club was organized in January, 1961, with thirty-one charter members, and three corresponding members. We meet at the Chamber of Commerce Building in Myrtle Beach at 8:00 P.M. on the third Tuesday in the month, except for the months June, July, and August. Membership is open to all persons interested in the collection and/or study of mollusks, whether or not they are permanent residents of the state. Membership is not limited to those collectors with a lot of experience. Our officers are: President, Dick Petit; Vice-President, Dr. George Wise; Secretary-Treasurer, Mrs. Pat Kugler; Director, Dr. Christopher Wood; Director, Howard Harrison; Director, Mrs. Lib Jones.

In the Chamber of Commerce Building, we have a wonderful collection on display of the local shells along the Grand Strand, donated by Mr. and Mrs. Dick Petit. Each member may add to this collection as she or he wishes.

Highlights of the past year were a talk by Mr. Dick Petit at the March meeting on the Naples Shell Show, Naples, Florida. In April Dr. Roland F. Zeigler, Florence, South Carolina gave a most inspiring talk with colored slide illustrations on the life of the shell, the animal within, their growth and their habits.

A number of plans are under consideration to make our next year even more progressive.

NEW YORK SHELL CLUB, William E. Old, Jr., Recording Secretary: On June 11th, the New York Shell Club conducted its 100th meeting. It was noted that Mr. Anthony D'Attilio had attended the entire 100 meetings. Mr. Fred Tobleman had been present at 99 of the 100 meetings. It had been Mr. Tobleman who had presented the first paper read at the first regular meeting in 1949. Both are charter members of the NYSC and Mr. Tobleman is also a charter member of the AMU.

The officers for the year 1961–62 are: Harold Feinberg, President; Josephine Wichern, Vice-President; Mathilde Weingartner, Treasurer; Grace McDougall, Corresponding Secretary; William Old, Jr., Recording Secretary; and Nick Katsaras, Historian. We have approximately 250 regular and corresponding members, including some in Australia, Japan, Mozambique, and the West Indies.

The mimeographed "Notes" appear 10 times a year. Mrs. Dorothy Raeihle, the Editor, endeavors to have articles for the beginner, as well as ones for the advanced collector. Notes are sent at cost to corresponding members.

The New York Shell Club meets on the 2nd Sunday of the month from September to June. Meetings are held in Room 319 of the American Museum of Natural History. Meetings are called to order at 2 P.M. From 1 until 2 P.M., an informal "Identification Clinic" is held. Many of the members come early to bring shells to be identified, or to socialize.

Usually two scientific papers are presented at each meeting. During the year, guest speakers were Dr. Henry E. Coomans of Amsterdam, the Netherlands, "Shelling in the Netherlands Antilles." Dr. Alan Solem, "Collecting for the Chicago Natural History Museum." Mr. and Mrs. George Kline spoke on their two New Caledonia expeditions. Members showed slides of trips to Europe, Florida, and to our own Long Island. Dr. William E. Dodd spoke on the Madagascar Expedition conducted by the Academy of Natural Sciences of Philadelphia.

Other popular features of the meetings are the "Shell of the Month." This may be a scientific observation concerning a given shell, but usually it is a personal account of the story behind a particular shell in the speaker's collection. The "Question Box" is open for conchological questions, which are discussed at large.

LONG BEACH SHELL CLUB, Ralph Bormann, Secretary: We have enjoyed a very successful year which included nine regular meetings, an auction, covered dish supper and a watermelon feed. As usual the Christmas party combined election of officers, an exchange of shell gifts, and distribution of the membership directories.

Officers elected for 1961: Katherine Shuman, President; Ralph Hall, Vice-President and Program Chairman; Ralph Bormann, Secretary-Treasurer; Mary Bormann, Historian; Mrs. Eugene Wilkins, Librarian.

The club maintains a library for use of its members, offering most of the current shell books and many pamphlets.

Quite a lot of collecting, mostly in Mexico, was done by our members during the year.

SAINT PETERSBURG SHELL CLUB, Gertrude E. Brakefield: The 1960–61 season included twelve field trips (Alger Blaine and Bob Lipe, leaders) and ten semi-monthly meetings (November through March) at which the following subjects were covered:

Confessions of a Shell Dealer, Mrs. Selma Lawson; Shelling Sanibel, Mrs. J. M. Hillman; What to Show and How to Show It at the Shell Show, Dan Steiger; Common Florida Shells, Edna Marcott; Story of a Shell Doll, Mrs. Emma Hanssler; Outstanding World-Wide Shells, Mrs. Dorothy Hanssler; Edible Shells and How to Cook Them, Barbara Steiger; Echoes of the Shell Show, Dan Steiger; Heilprin's Caloosahatchee Pliocene Fossils, Mrs. Lulu Siekman; Confusion Among the Cones, Roger Dunn.

The annual Shell Show was held late in February with these able judges: Dr. William Clench, Dr. Harald Rehder, Mrs. Selma Lawson. The Smithsonian Institution Award went to Mrs. J. M. Hillman for her fine exhibit of shells collected at Crystal Beach, Florida—190 species from a half mile radius!

The annual picnic was held on the Sunshine Skyway, well attended and the wind cooperated by pushing the tide out so that many shells were taken.

Meetings are held on the 2nd and 4th Friday of each month (November through March) at the Catholic Daughters of America Hall, Third Street and Sixth Avenue South, St. Petersburg. The following officers elected for 1960–61: President, Dorothy Hanssler; Vice-President, Percy Slinn; 2nd Vice-President, Robert Lipe; Treasurer, Roger Dunn; Recording Secretary, Barbara Steiger, Corresponding Secretary, Edna Marcott.

BOSTON MALACOLOGICAL CLUB, Gladys McCallum, Secretary: The increased popularity in shell collecting is reflected in the addition of fourteen new members bringing the present total to seventy-three.

The continued interest in our programs is evidenced by an attendance of approximately 50 percent of the membership at meetings.

Titles and speakers for the 1960–61 program are as follows: "A Report on the A.M.U. Meeting in Montreal," Miss E. Nyberg, Dr. W. Clench, and Mrs. G. McCallum; "Reminiscences of Collecting on Sanibel Island," Dr. E. Michelson, Dr. W. Clench and Mrs. G. McCallum; "An Amateur Contemplates," Mr. E. Baker; "A Visit to the Mollusk Departments of some European Museums," Dr. R. Turner; "Collecting Cameos," Dr. A. Cheever; "New England Malacology," Dr. R. Turner; and "Nomenclature," Dr. E. Michelson.

In the spring, a fresh-water collecting trip was held in Westford, Mass. Also incorporated into the day was a visit to the home of Mrs. Mildred Reid to view her world-wide collection of shells and a "Chinese Auction." In June, a second field trip was held. The beach at West Dennis, Mass. proved to be a very "happy hunting ground." Mr. Robert Bullock received first prize for finding forty-six different species of mollusks.

Officers elected for 1961–62 are as follows: Mr. Richard Foster, President; Mr. Emmett Baker, Vice-President; Mrs. Gladys McCallum, Secretary-Treasurer; Mrs. Kay Lawrence and Mr. Josef Vagvolgyi, Executive Committee; Mr. Kenneth Boss, Conchological Recorder.

Meetings are held at the Museum of Comparative Zoology in Cambridge, Mass. at 8 P.M. on the first Tuesday of each month from October through May. Visitors are always welcome.

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, Helen DuShane, Secretary: Our meetings are held the first Monday of each month in the auditorium of the Los Angeles County Museum. Our officers are: President, Gale Sphon; Vice-President, Bruce Campbell; Treasurer, Joan Troesch; Secretary, Helen DuShane.

This ends a year of successful experimentation in joining with other shell clubs of California in printing a quarterly newsletter. Recently, members voted to continue the newsletter as a very worthwhile means of exchanging club information. The main drawback to a regular publication is the enormous volume of work done by a few people, namely the Editorial Board composed of John Fitch, Crawford and Jean Cate, Joseph DuShane.

Monthly programs have been varied and interesting and the club has sponsored several well-attended field trips. Trawling in the Gulf of California last summer on the Ariel Expedition revealed a number of new shells which have been reported in detail in "The Veliger," Vol. 4, No. 1, July 1, 1961, and in "The Nautilus." In addition, members have had the wanderlust this year with John Q. and Rose Burch visiting all the great museums of Europe, climaxing a three months trip with attendance at the AMU meeting in Washington, D.C. Other members have been collecting in Hawaii, Florida, the Caribbean, Anacapa Island, Baja California, and the Mexican West Coast.

We had thirty members at the AMU-Pacific Division meetings on the U.C.-Santa Barbara College campus.

THE PALM BEACH COUNTY SHELL CLUB, Mrs. William W. Hughes, Corresponding Secretary: Officers serving in 1960–61 were William W. Hughes, President; William Ross, Vice-President; Mrs. Lily Roberts, Recording Secretary; Mrs. William W. Hughes, Corresponding Secretary; John Root, Treasurer.

The past twelve months have produced some very enjoyable meetings and field trips. These last took us to Boynton Beach, to Boynton Inlet, to Clewiston for fossil shells, to Bear Cut in Miami and to Jap Rock near Boca Raton. A local newspaper covered this excursion and though the ocean was rough and collecting poor, the Sunday edition gave us good publicity.

Other highlights were colored slides of rare living species presented by Mr. Dan Steiger of Tampa and a lecture on shell identification by Dr. Gilbert Voss of the University of Miami.

Our annual four-day shell show attracted many visitors. Mrs. Virginia Lee was awarded the Academy Award (Academy of Natural Sciences, Philadelphia) for her educational exhibit while another member, Mr. Harold Gordon exhibited several tanks of living mollusks.

Visitors to our area are cordially invited to attend our meeting; a phone call to any officer will establish date and place of the next meeting or field trip.

PACIFIC SHELL CLUB, Ray Poorman, Past President: Members of the Pacific Shell Club have enjoyed another year of interesting meetings and good programs. Again a successful auction was held, Mr. William Uldrich of the Long Beach Shell Club acting as auctioneer. Mr. and Mrs. Floyd Hallstrom who lived two years on Kwajalein entertained with colored slides of their skin diving activities and a display of specimens of shells and corals. Ralph Kettering presented a thrilling account of dredging from the *Ariel* in the Gulf of California. Dr. Homer King told of a collecting trip in the company of the Burches in the area of Mazatlan. These are some of the highlights of the past season.

The Pacific Shell Club joined the other California shell clubs in a newsletter project, a feature which our members find most interesting.

We were saddened by the passing of our founder and sponsor, Dr. Howard Hill. He will long be remembered for his generosity of time and effort in our club's interest. Mr. George P. Kanakoff has kindly consented to act as sponsor.

Beginning with October 15, meetings will be held on the third Sunday of each month at the Los Angeles County Museum, and, as in the past, all are invited.

Officers for 1961–62: President, Walter Barber; Vice-President, Mrs. Marsha Dippell; Secretary-Treasurer, Miss Elois Crum; Corresponding Secretary, Mrs. Walter Barber; Museum Sponsor, George Kanakoff.

CONNECTICUT VALLEY SHELL CLUB, Helen B. Burt, Secretary: We meet every month on the second Monday at the Museum of Natural History, 236 State Street, Springfield, Massachusetts. Our officers are: Earl H. Reed, President; John E. Fleming, Vice-President; Helen B. Burt, Secretary; Martha Menard, Treasurer.

The enthusiasm of our newly organized club is marvelous. We have made field trips to Cape Cod as well as the Springfield and Northwestern areas; here we are collecting land and fresh-water mollusks for distributional data and for possible future publication. We also plan to contribute specimens and data to museums.

Our club meetings have been challenging and instructive, covering a wide range. We have shared, via lectures, collecting trips to the Florida Everglades and Keys, to Sanibel and Nassau, Nova Scotia and of course to our own and other New England areas. Dr. William J. Clench spoke to us on "Why We Collect Shells" and our club president has lectured frequently on identification and related subjects.

A meeting never goes by without enjoying newly acquired specimens and interesting collecting experiences of our members. Some of us are becoming interested in the mollusk as well as the shell. Specimens brought to meetings range from minute terrestrial species, through odd pelagic pteropods, to the largest marine shells. We are looking forward to another happy, fruitful year, and, most of all, to making friends.

SHELL CLUB OF THE RYUKYU ISLANDS, Bernice Albert, President: Our club (SCORI) existed for several years as an informal group of interested amateur shell collectors. During 1960, the group swelled to the point where it could no longer be kept informal and, on October 17, 1960, it formally adopted its constitution with an original membership of twelve people. At present we have eighteen active members, only three of whom were among the original group. As our membership is made up primarily of military personnel, we have a rather rapid turnover.

One of the most popular features of our monthly meetings are the "What, Where and When" sessions. Each person is called on to recount their finds and/or observations during the preceding month. This always starts a lively conversation, comparing other similar experiences.

The club project for this year is the re-classification and expansion of the permanent collection located in the Armed Forces Museum, where we meet the fourth Monday of each month at 8:00 P.M. It is hoped, at the completion of this project, that we will have as nearly complete a collection of the Mollusca of this area as possible. This collection, donated by Bernice Albert, our club president, now numbers approximately 250 species.

Our officers for this year are: President, Bernice Albert; Vice-President, Steve Haight; Secretary-Treasurer and Corresponding Secretary, Kim Haight; Members Board of Governors, George Kiethahn and Franc Hee.

SCORI cordially extends to all visiting collectors, their families and friends, an invitation to visit our meetings whenever possible or please call on us individually.

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Eugene Musial, President: Since last August the Psyche of each of us travelled the ends of the earth in search of conchological fact and fancy. Ashbery observed the ferocious *Melongena*. Russell came up with a Kinsey report on salmon and this in color movies. Becker scattered her money coweries all over the world. Hall produced, directed, narrated, and photographed the wonders of spring in full color, this to the tinkle of knives and forks at the Annual Banquet. Baedeker Wandyez took us on a cook's tour of her homeland, Sanibel Island. Potter managed, by the thickness of a scalp, to stay out of the Red Men's conquering grasp on her tour of the Trade Routes of the Aboriginal Indians. Plummer toured the world with a *Strombus* in one hand and Abbott's "Indo-Pacific Mollusca" in the other. Gary stayed home to search out the shells of the Niagara Frontier. And finally, we all went beachcombing—in the museum—for Bradley's shells.

All in all it was an exciting year. We came through it full of enthusiasm for conchological lore and camaraderie for all "us conchs." Our group has grown like Topsy! Ideas for improvement of our Section came fast and furious. One, which we should like to share with our fellow clubs, is a library of shell books. We acquire books by purchase and/or donation. Each member borrows one, keeps it until next meeting when it may be exchanged for another. Title to all books is in the name of the club.

All interested persons are welcome to attend our monthly meetings held at 8:00 P.M. in the Buffalo Museum of Natural Sciences the third Friday of each month, July, August and December excepted.

The 1961 officers are: Honorary, Mrs. Fred Hoffman; President, Eugene Musial; Vice-President, Mrs. Alice Gary; Secretary, Mrs. Vincent S. Vallone; Treasurer, Miss Louise Becker; Librarian, Mrs. Peter Plummer.

NATIONAL CAPITAL SHELL CLUB, Helen Margaret Carpenter, Secretary: On a Thursday evening in September, 1960, the National Capital Shell Club of Washington, D.C., was organized. Our officers for our first busy and very successful year were Dr. Harald A. Rehder, President; Gen. M. H. Silverthorn, Vice-President; Mrs. Carl I. Aslakson, Secretary-Treasurer; Dr. Joseph Rosewater, Historian; Dr. Earle D. Matthews, Program Chairman. Our meetings are held in Room 43 in the Natural History Building of the U.S. National Museum, 10th and Constitution Avenue, Washington, D.C., usually on the third Thursday of each month at 8:15 P.M. Yearly dues are $2.00 a person and $3.00 for a family.

Our programs for the 1960–61 year, widely varied and completely delightful, included illustrated talks on "Shell Collecting Areas In Okinawa" by Col. William A. McCarty; "The Family Pinnidae" by Dr. Joseph Rosewater; "Shell Collecting in the Hawaiian Islands" by Gen. M. H. Silverthorn; "Mollusk Species Around Hawaii" by Dr. Harald A. Rehder; "Teredo Damage" by Dr. Ruth D. Turner; "Tropical Diseases in Liberia" by Dr. Thomas Burch; "Shell Collecting in Panama" by Dr. Earle D. Matthews; and last but most certainly not least, "Collecting in the Philippine Islands" by Dr. R. Tucker Abbott. Our April meeting was a lively and profitable shell auction, with Mr. Jack Parker, of the Philadelphia Shell Club, as auctioneer.

The National Capital Shell Club and the Greater Baltimore Shell Club were co-hosts for the annual meeting of the American Malacological Union in June. Chairman of arrangements was Dr. Joseph P. E. Morrison with Mrs. Carl I. Aslakson, Dr. Frances Allen, Mrs. William Blair, Maj. and Mrs. Walter N. Carpenter, Gen. M. H. Silverthorn, Mrs. Lothrop Luttrell, and Col. and Mrs. William A. McCarty as his official assistants. Of course, there was invaluable help from many others, including that of Dr. and Mrs. John W. Parsons of the Baltimore Shell Club.

In May we elected new officers for the 1961–62 year, initiating our plan of alternating the presidency with a scientist and an amateur. Gen. M. H. Silverthorn is President; Dr. Joseph P. E. Morrison, Vice-President; Mrs. Walter N. Carpenter, Secretary; Mrs. Carl I. Aslakson, Treasurer; Dr. Joseph Rosewater, Historian; and Dr. Earle D. Matthews and Dr. Harald A. Rehder, Executive Committeemen.

Our club has grown from the original 25 charter members to 83, in this, our first, happy year, with many prospects for new and interesting members. We plan even bigger and better things to come in our future programs, including a more or less permanent project for the club so that all of our members will have an equal opportunity to participate in the activities of the organization.

We sincerely hope that everyone who is interested will visit us in Washington, D.C.

JEANNE SANDERSON SCHWENGEL
1889-1961

Dr. Jeanne Sanderson Schwengel, a member of the Paleontological Research Institution, died of a stroke at St. Petersburg, Florida, on February 17, 1961, while attending the annual shell show. She was the wife of General Frank R. Schwengel, United States Army, retired, and chairman of the board of J. E. Seagrams and Sons, Distillers.

Dr. Schwengel was born at Stockton, California, on July 12, 1889. As wife of an army officer, her early years were spent in various posts in all parts of the country, and her directness and straightforward personality was no doubt fostered and developed during this period. Her interest in shells, to which she devoted so much of her later life, was begun during a winter's visit to Florida where she met Dr. (Mrs.) Louise M. Perry on Sanibel Island. This contact developed into a close association as she helped Dr. Perry in arranging her shells or as they explored together the beach each morning in the search of new finds. At Sanibel, also, Dr. Schwengel first met the late Ted Dranga, the famous collector, who in his later world-wide quest for shells always put aside a set of his choicest specimens for her. In this way, and through extensive purchases, she built up her magnificent collection said to contain more than 6,000 species from all over the world. In 1939, she won an award for her display of Florida shells at the New York World's Fair. She received the honorary degree of Doctor of Science from the University of Dayton for her contribution to the field of Conchology, her scientific achievements being attested to the University by Drs. Pilsbry, Rehder, and Perry.

Dr. Schwengel was not only a collector of beautiful shells but also a serious worker and student as indicated by her numerous papers published in the *Nautilus* often in collaboration with Pilsbry, McGinty, and others, and many of the rare species of Florida shells now bear the names which she first gave them. Her revision of Perry's *Marine Shells of the Southwest Coast of Florida,* to which she added 15 plates, is her most important publication and brings up to date this very useful book of Florida mollusks published under the auspices of the Paleontological Research Institution.

Dr. Schwengel was deeply devoted to Dr. Pilsbry of the Academy of Natural Science and for many years gave generously of her time to him and his concerns, coming to Philadelphia from her distant home in New England or from Scarsdale to spend two or three days in routine curatorial duties or in the identification of new shells she had recently received. Each year in November she, together with Miss Anne Harbison, also of the Academy, gave Dr. Pilsbry a fine birthday party (usually at the Robert Morris Hotel).

This was an event anticipated with great pleasure by her numerous friends in the Philadelphia area. She also was hostess at the splendid parties for members of the American Malacological Union at the annual meetings which she attended regularly until failing health no longer permitted.

A few years ago, Dr. Schwengel was involved in an auto accident at Tampa, and from that time her health failed rapidly. During a subsequent visit to Hawaii she suffered a severe coronary attack. Thereafter she was continually in poor health so that her stimulating visits to friends became less frequent. Dr. Schwengel will long be remembered for her forceful personality, her goodness of heart and devotion to special friends (among whom she was affectionately known as Jeanne), as well as for the impulse she gave to American Malacology, particularly that connected with the study of Florida shells.

Dr. Schwengel was a member of numerous societies and clubs which she often served in some official capacity. She was President of the American Malacological Union in 1952.

She was a research associate of the Academy of Natural Science of Philadelphia and a member of the visiting committee of the Museum of Comparative Zoology at Harvard.

In October, 1953, she was elected to membership in the Paleontological Research Institution where she deposited the type and representative specimens noted in her revised edition of Perry's works retitled *Marine Shells of the Western Coast of Florida*. This gift was welcomed at the time and as a memento will have enduring value.

Not only those who were with her at the end, but all her many friends can have comfort in remembering her often expressed sense of especial wellbeing and her great happiness in once again finding herself in familiar surroundings with those so able to share in her pleasures and interests.

Axel A. Olsson

(Reprinted from the April 8, 1961 Minutes of the Paleontological Research Institution, Ithaca, New York.)

MAXWELL SMITH

1888-1961

Dr. Maxwell Smith, a past president (1939) of the American Malacological Union, died September 12, 1961 in Asheville, North Carolina. He was 73.

Dr. Smith was perhaps best known for his several illustrated books on marine shells which are familiar to student and collector alike. They include "East Coast Marine Shells"; "A Review of the Volutidae"; "Panamic Marine Shells"; "The Rock Shells"; "Triton, Helmet and Harp Shells," and most recently, "Universal Shells" which is still in press.

HOWARD RICE HILL

1889-1961

Dr. Howard R. Hill, Chairman, Pacific Division, AMU, passed away May 23, 1961 at Los Angeles, California, after an illness lasting about two months. He is survived by his wife, Betty, and a brother, Edgar R., at Newport Beach, California.

Dr. Hill was born in Chicago, Illinois, July 19, 1889. His father was a Presbyterian minister, a graduate of McCormick Theological Seminary and his mother was a graduate of Downer College and the Chicago Art Institute.

When Howard was five, his family moved to Portland, Oregon, where his father was pastor of the First Presbyterian Church. His father owned a small, wooded ranch on the Columbia River and it was here that Howard learned his love of birds and animals. He graduated from the Portland Academy, then went to Chicago to attend Chicago Latin School, where he studied Greek, Latin, and French. He later attended Lake Forest University and the University of Chicago before going to Carroll College at Waukesha, Wisconsin, where he met Betty: she helped him with mathematics while he helped her in German. After he graduated, he earned his master's degree at the University of Illinois. While he was working for his doctorate, World War I interrupted his studies.

On June 25, 1919, he and Betty were married at Long Beach, California, and for the next three years he was Fish Investigator for the U.S. Department of Agriculture, along the Atlantic Coast and Gulf of Mexico. He and Betty returned to Long Beach for a year until he joined the staff of the Los Angeles County Museum in 1922. During that year in Long Beach, he collected shells for the first time.

In 1931 he resumed his doctoral studies, this time at the University of Southern California, taking night and Saturday classes. It took six long years of struggle and determination to earn his doctorate while maintaining his work at the Museum. June 1937 marked his achievement with the cherished degree.

A year later, Dr. Hill was appointed Curator of Zoology but later the title was changed to Curator of Marine Zoology, the position he held until his retirement in July 1959. Throughout his career, his success was due in large measure to the encouragement and help of Mrs. Hill.

While at the Museum he built up its collection of marine invertebrates to 125,000 sets. He was the author of 18 publications in zoology, one of which was "Common Shells of the Los Angeles County Coast." He was honored by having several shells named for him, among them:

Micrarionta hutsoni hilli Willett, 1930
Anachis hilli Pilsbry & Lowe, 1932

Cardita hilli Willett, 1944
Persicula hilli (M. Smith, 1950)
Crockeriella hilli Hertlein & Strong, 1951

Dr. Hill was active in many organizations: Fellow, American Association for the Advancement of Science; Fellow, Life Member, and Director of the Southern California Academy of Sciences; Honorary Member, Long Beach Shell Club; Honorary Member and one of the founders of the Los Angeles Mineralogical Society; President, Southwest Museum Conchological Club; Member, Conchological Club of Southern California; Sponsor and Founder of Pacific Shell Club; Sponsor of Los Angeles Aquarium Society; Board Member of National Skin Divers Organization; Member of Sigma Xi and Phi Sigma, honorary scientific fraternities; A ruling elder of Immanuel Presbyterian Church, and member for 39 years; Chairman, American Malacological Union, Pacific Division.

Dr. Hill was noted particularly for his Saturday classes at the Museum for selected students in marine zoology. This was the beginning of scientific careers for several of his class members. After his retirement, Dr. Hill worked with the Catalina Museum Society, rearranging and enlarging its exhibits. He was also Consulting Zoologist for Disney Studios and other motion picture companies.

—Eva Maye Fletcher

THE AMERICAN MALACOLOGICAL UNION
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1961 - 1962

✦

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1961 - 1962

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Membership List Revised October 15, 1961

* Pacific Division member

Abbott, Dr. R. Tucker, Dept. of Mollusks, Academy of Nat. Sci., Philadelphia 3, Pa.
Aguayo, Dr. Carlos Guillermo, 4 No. 554 Vedado, Havana, Cuba.
Akers, Mrs. Frank, 334 Chilean Ave., Palm Beach, Fla.
*Albert, Mrs. Ernest, Post Eng. Rycom., Bldg. & Grds. Br., 8135 A.V. APO 331, San Francisco.
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Alexander, Robert C., 423 Warwick Rd., Wynnewood, Pa.
Allen, Dr. J. Frances, 5702 Queen's Chapel Rd., W. Hyattsville, Md.
Allen, Miss Letha S., 107 W. 29th St., Baltimore 18, Md. (All shells.)
Allen, Lester E., 187 Argyle St., Yarmouth, Nova Scotia.
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American Assn. Advancement Science, 1515 Massachusetts Ave., Washington 5, D. C.
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Arias, Sergio, M.D., Sociedad de Ciencias Naturales, Apartado 681, Caracas, Venezuela. (Land, f.w. mollusks of the neotropical region.)
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Athearn, Mrs. Roy C., 5105 No. Main St., Fall River, Mass. (Land shells.)
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Range—fauna Mollusca.)
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Closs, Dr. Darcy, Escola de Geologia (Universidade do Rio Grande do Sul) Avenida Paulo Gama sn. Porto Alegre (RGS), Brazil. (Cephalopods, Pelecypods.)
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Connecticut Shell Club, Peabody Museum, New Haven, Conn.
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